

# COMPUTER WORLD

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### End Comes for Telex vs. IBM

TULSA, Okla. — Faced with the choice of rags or riches, Telex blinked and negotiated a settlement of its antitrust suit against IBM just 72 hours before the Supreme Court was to hand down its decision on whether it would hear the case.

The settlement called for no payments of any kind between the parties. IBM released Telex from an obligation to pay \$18.5 million as the result of IBM's countersuit on trade-secret charges, and Telex agreed not to pursue its antitrust claims.

The negotiations leading to the settlement were initiated by Telex three weeks before it was signed, with the most intense negotiations coming

in the three days before the pact was initiated.

The suit was settled with prejudice, which bars Telex from ever bringing the charges again, ending one of the most dramatic private antitrust cases of the past 50 years.

The case resulted in IBM being handed its first antitrust defeat of the computer era, but IBM's persistent pursuit of its case won it a stunning reversal on appeal.

The move to the Supreme Court was to be the final act in the play, but the settlement negated the final scenes.

Reaction was predictable. "Under the circumstances, IBM felt there (Continued on Page 2)

### IBM Planning Attack On Antitrust Judge?

By Edith Holmes  
And E. Drake Lundell Jr.

NEW YORK — A mystery document filed with the Second Circuit Court of Appeals here last week indicated IBM may be planning an attack on Federal District Court Judge David N. Edelstein, who is hearing the government's antitrust suit against the firm.

The document, which was quickly sealed from public view almost as fast as it was presented to the appeals court, apparently claimed actions taken by the

judge in the case have hurt IBM's defense. Looking at the docket in U.S. vs. IBM, the only paper filed which could possibly require review by the appeals court involves Edelstein's denial of a request by IBM that it be allowed to interview government witnesses before they appear on the stand without a transcript of such interviews.

The IBM order to show cause, which Edelstein denied, claimed confidential interviews were "essential in preparing a proper cross-examination," but glossed over the fact that IBM had originally asked for the transcripts of such interviews at a pretrial hearing last May.

Specifically, IBM encountered difficulties with government witnesses from General Electric who refused interviews on May 13 and again on Sept. 3 because of the order requiring a transcript.

This apparently led IBM to file an application for the order to show cause with the district court on Sept. 23, which the judge denied on Oct. 3.

There have been several other clashes between IBM attorneys and the judge over his handling of the case, with IBM attorneys often expressing their dis-

(Continued on Page 5)

### Faster Than 370/168'

## Michigan Accepts Amdahl 470 After Tests

By Don Leavitt  
Of the CW Staff

SAN FRANCISCO — After two months of tests and production work on the IBM 370-compatible Amdahl Corp. 470V6, installed onsite [CW, Sept. 10], the University of Michigan Computing Center has accepted the new machine, according to Al Emery, manager of the evaluation effort at the university.

Emery told the opening technical session of the Computer Management Group's (CMG) national meeting here last week that the study period was obviously too short to exercise the physically small but fast new computer system completely.

The tests have been extensive enough, however, "to satisfy us the machine can perform the work we need done. And clearly it is faster than the 168" with which it was compared.

The test was limited to a special time-sharing environment utilizing the home-grown Michigan Terminal System (MTS). Later in the presentation, Emery's companion, senior systems research programmer Mike Alexander, warned the audience the results they obtained are "total-

ly irrelevant to any other operating system."

Moments later, however, he said that — in his mind, at least — "there is no question the Amdahl machine is superior to the 370."

At the same time, its compatibility with the IBM era was appreciated. It meant, for one thing, the university had a complete, working system with which to test the Amdahl machine.

It also meant the system could be and was switched back to the 370/168 on the one occasion the university suffered serious downtime with the Amdahl equipment. And the change in machines meant the Amdahl downtime was utterly transparent to the terminal users.

#### Good Test Situation

MTS was a good test situation for the evaluation, Emery indicated, because it is an operating system, originally built for the IBM 360/67, with a multiprogramming supervisor and various other components that aid in measurement and control of how the system is being used. It also works with either interactive or batch jobs.

Statistics-gathering facilities are available at various levels within MTS. CPU time is collected routinely for each task along with the number of pages read for each task. For batch jobs, this data is sent along to a record tape for later analysis and billing of customers.

(Continued on Page 5)

## Ford Names Commission on EFTS

By a CW Staff Writer

WASHINGTON, D.C. — President Ford has finally nominated a chairman and public members to the National Commission on Electronic Funds Transfer, a study group which he signed into existence almost a year ago.

The commission will study and then "recommend appropriate administrative action . . . in connection with the possible developments of public or private electronic fund transfer systems (EFTS)," the White House said.

Ford nominated retired U.S. Congressman William B. Widnall of Saddle River Borough, N.J., as chairman of the commission.

Members representing industry include Verne S. Atwater, president of Central Savings Bank in New York City; Roy G. Green, president of the Fidelity Federal Savings and Loan Association in Jacksonville, Fla.; Herb Wegner of the Credit Union National Association; and Gordon Worley, executive vice-president of Montgomery Ward.

Also, George W. Waters, executive vice-president of the American Express Co.; John J. Reynolds, president of Interbank Card Association; and Richard D. Hill, chief executive officer of the First National Bank of Boston.

Nominees from outside the industry include (Continued on Page 2)

## Course of Telex vs. IBM Shaped by Personalities

By E. Drake Lundell Jr.  
Of the CW Staff

The impossible dream turned into a nightmare for Telex executives in the dusty old town of Oklahoma City on Jan. 24.

And since that day, when their dream of beating IBM in the legal arena started crumbling, they lived with the nightmare. It finally broke their resolve a week ago.

Led by cocky, assertive Roger Wheeler, the Telex chairman and a major investor, the firm decided three years and seven months ago to try to beat IBM in the courtroom — a feat it had not been able to accomplish in the marketplace in the five previous years, when it had entered the peripherals marketplace at the urging of users dissatisfied with poorly operating IBM tape drives.

Except for the essentially faceless IBM executives who communicate with the public through a screen of publicity people, Wheeler was one of the most hidden people in the case.

An aggressive executive, Wheeler took over an ailing hearing-aid maker years ago and turned it first into a minor name in the "hi-fi" field — when that term was popular — and then into the first "plug-compatible peripherals manufacturer" — before that term was

Other stories on the Telex-IBM settlement on Pages 6 and 47.

fashionable — at the urging of Dupont Corp., a user that could not accept the deficiencies in IBM equipment, especially at IBM prices.

Wheeler, in his pastel-colored, California-sans-serif suits complete with white shoes, still looks fit enough to challenge most wellwretches, a dying fighting breed. And he was one of the few men in the industry at the time to turn down an IBM settlement offer made in the early rounds of antitrust litigation.

The \$5 million to \$10 million offered by IBM before the trial started would have been quite a boost

to Telex — and certainly better than the empty hat Wheeler and Telex came up with in the final settlement.

But Wheeler alone is not the whole story of the case, which ended in frustration after three years and seven months; he is not even most of it. The cast of characters is large and varied — people who bet their fortunes, reputations and egos on the case. And some who did it as just another job.

People are the story here, not abstract legal principles — even though they, too, have their place and importance.

The story always had the David against Goliath aura — the weak challenging the strong, the small battling the large, the powerless striving against the powerful.

The IBM publicity army often negated any possible public sympathy with startling — and often true — accounts about Telex's theft of trade secrets and industrial espionage.

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## In Privacy Act Interpretation

## OMB Settles Dispute On Data Disclosure

By Nancy French  
 of the CW staff  
 WASHINGTON, D.C. — The Office of Management and Budget (OMB) stepped in last week to help congressional caseworkers obtain personal information about constituents that agencies have been denying them because of "overly conscientious" interpretation of the Privacy Act of 1974.

The caseworkers here as well as in home district offices were denied information needed to help constituents resolve difficulties with government agencies. OMB officials met with representatives from the three largest agencies with which caseworkers were experiencing difficulties — the Department of Defense, the Department of Health, Education and Welfare, and the Veterans Administration.

"In many cases, caseworkers were being denied access to information that would have been available under the Freedom of Information Act," an OMB spokesman said.

The solution involved publishing an additional "routine use" for agencies' computerized or manual personal information files and will become effective in 30 days, the OMB spokesman explained.

The new provision would permit disclosure "to a congressional office from the record of an individual in response to an inquiry from the congressional office made at the request of that individual." The provision was issued in a letter from OMB Director James Lynn to heads of the three agencies involved and published in the *Federal Register*.

Rep. Bella Abzug (D-N.Y.), chairman of the House Government Committee's Subcommittee on Government Information and Individual Rights, entered the routine use in the Congressional Record as a "warning to government agencies" that have been causing problems, a source said.

Before the new routine use becomes effective, agencies are being asked to accept a "liberal standard of proof" of consent from the individual involved, the OMB spokesman said.

"If a congressional staff caseworker says 'we have the written consent of John Doe' on this request, that should be

enough," he said.

Individual congressional offices are setting up procedures to deal with the problem of establishing consent, especially in the case of "walk-in" district offices.

## Procedural Changes

A staff member for privacy proponent Rep. Barry Goldwater Jr. (R-Calif.) said some simple procedural changes may have to be made in handling requests from constituents made by telephone or on personal visits.

The changes will include use of a simple release form to verify "written consent," he said.

When constituents' requests for assistance are made by phone, caseworkers will continue to contact agency congressional-relations people by phone on the basis of "implied consent" in accordance with previous practices.

"At the same time such a request is initiated by the caseworker, he will mail the constituent a copy of the release, which simply states I authorize (name of congressman and district) to use whatever

personal information is necessary to help solve my problem, which is as follows," he said.

Space will be provided for a brief description of the problem.

Or caseworkers can simply ask agency employees to convey the information requested directly to the constituent, which is how the majority of written requests are handled, he said.

"Of our annual case load of about 2,000 individual requests, all but about 200 are letters," he said. "We buck many of these to the agency and never see the correspondence it sends to the individual," he said.

"While the present problem appears to have been straightened out, unfortunately it happened without resolving the question of third-party access," the OMB spokesman said.

"In a 'mother/son' type of case, where no real emergency or matter of health or safety is involved, it appears the law would make it illegal to release personal information, even to a family member."

## Telex vs. IBM Comes to an End

(Continued from Page 1)

wasn't any point to continuing the litigation," IBM stated. The other firms suing IBM claimed the settlement would not affect their cases.

Computer Industry Association President A.G.W. Biddle called the settlement a "gross miscarriage" of justice which undermined the "urgent" need for congressional action to strengthen the antitrust laws.

Most observers attributed the settlement to the fact that Telex would have had to go into bankruptcy if the Supreme Court had decided not to hear the case or ruled against it on the appeal.

Last June the firm admitted it would not be able to pay the \$18.5 million IBM had won on its counterclaim if that claim was upheld either by a refusal of the high court to hear the case or by a decision by that court ruling against Telex's antitrust claims while still upholding the IBM counterclaims.

At the same time, Telex has been profitable during the past year, leading the company executives to the decision not to risk the firm's future.

## EFTS Unit Nominated

(Continued from Page 1)

clude Fairfax Leary Jr., professor of law at Temple University; Ralph F. Lewis, editor of the *Harvard Business Review*; Almarin A. Phillips, dean of the School of Public and Urban Policy, University of Pennsylvania; and Freyda P. Koplow, former Massachusetts state banking commissioner.

Also, James E. Faris, director of the Indiana Department of Financial Institutions, and William B. Lewis, deputy commissioner of New Jersey's Department of Banking.

The nominees still await confirmation by the Senate.

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Next, we asked three computer installations in the East, Midwest and West to provide the "tracks." They were to choose the files to be run and make the evaluation of the results. No hanky-panky. At one center, all four sorts were put through their paces under exactly the same conditions. At the other two places, SyncSort was matched against the IBM sorts.

Finally, we did something that's never been done before on the playing fields of sorting. We brought in a hardware monitor to judge the events.

SMF analysis wasn't good enough. It doesn't tell you what's really happening in a sort and it helps spawn those myths we referred to above.

By the time the dust settled, Whitlow's anthem had been played three times and SyncSort III-and-a-half had walked off with Gold Medals for:

- Least TRUE CPU TIME. SyncSort used 31.8% less than the average of the other three sorts.
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Proud? Sure. But not exactly surprised. We knew we had the best sort all along. But what did surprise us was how much new information we discovered about how other sorts really operate.

We discovered, for example, that other sorts use *twice* as much CPU time in the supervisor state as they do in the problem state. If one of our competitors tries to sell you a sort package, be sure to ask him if he's measured that aspect of his sort with a hardware monitor.

Or ask him if it's true that you can reduce channel time or device busy time by reducing EXCP's. He may not be aware that that's one of those sorting myths.

Why not call us today? We wouldn't want you to be misled because you didn't have the latest facts on sorting.

## In Case Shaped by Personalities

## Impossible Dream Turned Into Nightmare for Telex

(Continued from Page 1)

Those accounts tarnished Telex's image irreparably in the popular mind: Possible theft is more understandable than the possible misuse of market power.

In the end, the case did not boil down simply to good against bad, morality vs. immorality or completely right against wrong.

It encompassed the possibilities of good and evil on both sides; the issues of IBM's alleged marketing practices and Telex's alleged thefts showed the Janus-like nature of the industry, in which right and wrong may be intertwined and possibly intermixed in the same organization.

## Others Falters

Control Data Corp., a large mainframe maker, a whole host of small competitors and even the U.S. government had not been able or willing to bring IBM to the bar in the courtroom.

The only other attempt — by Greyhound Computer Corp. — ended with a dismissed case in another dry, dusty Western town. The jury of housewives, retirees and car dealers never got to hear the IBM defense because the judge in the case accepted the IBM arguments before they were even presented.

But while a dozen others had faltered in pursuing antitrust cases against IBM, the unique combination of people at Telex got too high when the case reached the final round in the Supreme Court.

Wheeler, as chairman of the board, was ready for the fight. Tired — in his view — of being intimidated in the marketplace, he appeared to be enough of a scrapper to take the battle to a new arena where he apparently felt the referee was more impartial or less subject to pressure. And there were other scrappers on his staff, including Steve Jatas, Telex president, and, perhaps most important, Harry Ashbridge, a marketing support executive who disliked being "pushed around" almost more than the heroes in the old Westerns.

And the lawyer chosen by the firm — Floyd Walker — fit that mold, too, perhaps to an archetypal extent.

If Jatas had been more a sports figure, he wasn't the trim fighter type of Wheeler, but the slightly slow and a bit overweight guard on the junior varsity football team in high school.

But confident. Ready to go and sacrifice his time and effort in a struggle which, from the beginning, must have seemed a dream.

Confident. Feeling that the "right" was with Telex. Predicting — in his one remark to reporters during the entire trial — "We're going to win — big. Just wait and see." That prediction came a month before the original decision for Telex in district court.

Jatas joined Ashbridge and Walker on the Telex team and devoted full time to the case, ignoring company business for a full year during which Telex fortunes took a turn from bad to worse.

But of the executives from Telex, perhaps Ashbridge was the real sparkplug for their effort. The lean, sportily dressed marketing man put in 16-hour days on a seven-day-a-week basis, foregoing the restful pleasures of his small ranch 40 miles outside of Tulsa, Okla., the company's headquarters.

That year of effort ended with Ashbridge being the first witness to take the stand, understandably nervous in a medium-blue suit with lighter blue stitching, at least at first when the enormity of the undertaking must have hit with full force.

But in his second and then third day on the stand, he gained confidence and strength, particularly under the late parts of the cross-examination after the IBM legal army had unloaded most of its biggest guns.

Immediately after that testimony, Ashbridge discovered what had been happening to Telex in the year he and Jatas had been devoting all of their efforts to the case and he left for good.

His voice was not one of those heard during the debates over whether the company should pursue the matter up to the Supreme Court. He probably would not have urged giving in — and perhaps would have made a difference.

Walker was the perfect lawyer for the case. The craggy-faced, slow-talking Westerner wanted to make enough money to "piss on the oil men" of hometown Tulsa — and he probably would have been able to if Telex had won under his contingency fee structure.

Walker seems to have an ingrained Western sense about large Eastern corporations and concentrations of economic power. He, moreover, translated that mistrust into hard work in the preparation phases of the trial against IBM, marshaling the IBM documents that he relied on in trying to prove IBM's intent to monopolize the market.

A cartoonist sat in Walker's office for most of the trial. It showed a small figure in a Superman suit labeled "F.W." standing atop a large building with a sign

saying "Think IBM." The F.W. figure was pushing the "k" off "Think" to make the sign read "Thin IBM."

Perhaps it summed up his objective concisely.

## Misleading Impression

But the interesting cast of characters in the case did not come only from the Telex side of the issue, with IBM and the court system serving up their share of personalities in the action.

The original district court judge for the case was called out of semiretirement in Utah to hear the matter. Judge A. Sherman Christensen, who was to become the first man ever to rule against IBM on a major matter in a courtroom, looks like everyone's kindly, fatherly uncle, more at home and in his element with his non-law on the trout stream than in the formal trappings of power that accompany a federal judge like a monk's habit. But the impression is misleading, for while Christensen is certainly at home on the trout stream — and probably doesn't have to lie about the one who got away — he turned out to be one of the hardest workers in the case.

Not only did he force the lawyers to put in longer days in the courtroom than they were accustomed to, but he also did his homework, reading for as many as eight hours each night after adjournment in order to get through the plethora of documentary evidence introduced.

And he kept everyone working by badgering the parties to hammer out stipulations out of court and forcing them to cut out the nonessentials in their examinations of witnesses with threats of Saturday sessions.

## Cast of Hundreds

On the IBM side, the cast numbered in the hundreds, but were not faceless, behind-the-scenes people: the top executives who, by design, did not say what they were thinking; the "hagmen" who shuffled into Tulsa with briefcases full of selected documents and internal notes, the special security guards who hacked up the federal court guards in protecting the IBM rooms in the federal court building.

But the man out front was Thomas D. Barr, the trial lawyer handling the courtroom action in most of the cases against the firm. He personified the firm's defense.

Although originally a Midwesterner, Barr, with his bulldog look and attitude, has adopted the look, feel and inflection of the successful Eastern corporate law-

yer so successfully that most people, not realizing his Missouri origins, would consider him a complete product of the Eastern propriety and Ivy League scene.

But, for the case, this image was played down; Barr even went so far as to adopt a pair of suspenders — usually bright red — to go with his banker's blue pin-striped suits. The "down-home" touch was seemingly designed to let the Westerners know he was, in reality, just a "good ole boy" in disguise.

But even with the disguise — for what it was worth — the meticulousness and precision that one learns to be successful in a high-time business law firm were not left at home. Backed up at first by F.A.O. Schwartz III (yes, of the toy store family and now chief counsel to the Senate committee investigating the Central Intelligence Agency in preparation for a life in politics), and then by David Boice, one of the brightest products of Yale in this generation even though he prefers to work in jeans and a sweatshirt, Barr prepared meticulously — and never stopped fighting the case.

And that may have been the secret. Even after the first defeat before Christensen in the district court, IBM never stopped trying. In fact, it tried harder. Many have indicated the Telex effort in the appeals court seemed half-hearted — and it may well have been, with the firm feeling the case was in the bag.

But IBM put as much into the appeal as it had into the rest of the case — even taking on ex-Attorney General Nicholas D. Katzenbach to make a presentation to the judges, several of whom were appointed while he was in the Justice Department.

And perhaps Katzenbach's professional approach to the case helped — for he seemed more to be leading a graduate seminar on the law than arguing a case. Not a flashy presentation, but effective. And when those appeals court judges overturned the decision against IBM while upholding the decision against Telex on the trade secret charges, the long nightmare for the Telex executives began.

Faced with the question "Do we risk this entire company, our jobs and our stockholders' investments on the chance that the Supreme Court will hear the case and reverse the appeals court's decision?" they had to search their souls.

The risk was apparently too much, even for the gutsy men who obtained the first and possibly last judgment ever against IBM on antitrust grounds.

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CW 1015

# Michigan Accepts Amdahl 470 After Tests Against 370

(Continued from Page 1)

There is, Alexander said, a good and valid separation of times charged to the supervisor and problem states "and that, of course, was vital to our evaluation of the Amdahl machine."

Another level of measurement was provided by the jobs subsystem of MTS which attempts to determine the characteristics of the workload on the machine and adjust certain parameters to optimize performance.

This subsystem watches CPU, paging, file I/O and total I/O measurements and, if any of these exceed preset limits, will attempt to reduce the load by inhibiting the startup of any batch jobs awaiting execution.

Two types of production jobs were selected for global timing comparisons, Emery explained. The first was a scientific calculation used in the determination of crystalline structures based on data obtained from X-ray diffraction experiments.

Identical calculations were performed on the 370/168 and the Amdahl 470. The programs "involved a significant portion of computational activity and relatively little I/O. The floating-point variables were all of short precision," the analyst noted.

The results showed the Amdahl machine with a better than 2 to 1 improvement—in terms of CPU seconds—over the IBM hardware.

The second production job—of a distinctly different nature—"revealed some interesting differences between the two machines," Emery went on.

This job was a literary search program written in Assembly language and containing no floating-point instructions. The search had three phases: the establish-

ment of a data structure to represent the search parameters; a reading of the data and a comparison of its contents with the key data structure; and a report of the results.

Identical runs on the two machines indicated the Amdahl 470V/6 was only 1.25 times as fast as the 370. To investigate this "unexpected result," the search program was rerun under a time tally monitor which is part of MTS, Emery said.

The monitor showed 60% to 70% of CPU utilization occurred during the scanning of chains of data blocks and the comparison of keywords in the blocks with information read in from the bibliographic data tape.

More significantly, Emery noted, the monitor pinpointed a set of eight instructions that seemed to be critical.

Inspection of the monitor results from both machines showed the same relative amount of CPU time was spent executing

the instructions in this loop. But closer study showed the 370 spending about equal time in both halves of the loop, whereas the Amdahl spent a "disproportionately large amount of time" performing the character comparison.

Further monitor runs confirmed the suspicion that the Execute instruction was the principal cause for the relatively slight speed improvement of the Amdahl overall, Emery said.

Modifying the loop to include a comparison on just the first few characters of each data chain, the program was run again on both machines.

Monitor results and normal production timekeeping indicated the modified program required less time on both machines, but that the relative improvement was "significantly greater" on the 470V/6, Emery said.

With the changes in place, the Amdahl machine ran 1.7 times faster than the 370.

Activity	CPU TIME (Seconds)		
	370/168	470V/6	Ratio
Structure Factor Computation	381.5	209.5	1.824
Linear-Square Refinement	431.9	181.4	2.287
Total	813.4	400.5	2.031

The results of the first production job—CPU utilization in the determination of the crystalline structure of myoglobin—run by the University of Michigan Computing Center to test the Amdahl 470V/6 against an IBM 370/168 showed the Amdahl machine with a better than 2 to 1 improvement over the IBM hardware.

This striking difference can be attributed almost entirely to the different implementation of the Execute instruction in the two machines, Emery said.

## IBM Planning Attack On Antitrust Judge?

(Continued from Page 1)

pleasure with some of the judge's rulings on the procedures that are to be followed in conducting the case and on objections to government-introduced documents (CW, Oct. 1).

If the IBM filing last week charged the judge with misconduct, as some rumors seem to indicate, the firm may well ask for his removal from hearing the case or ask for a limit on some of his rulings.

If removal is sought, it could have far-reaching consequences for the rest of the massive antitrust trial, which is the largest action of its type ever tried in a federal district court.

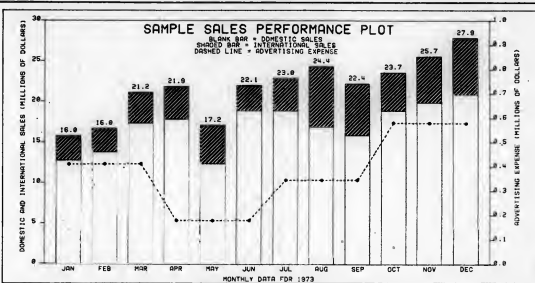
In effect, hearings on such a matter could drag on for some time, diverting interest and time from the case at hand. Additionally, if—and this would be an extremely remote possibility—Edelstein was removed from the case, it would take months for another judge to come up to speed on the issues, which could call for a relatively long recess.

That might delay resolution of the case until well after the presidential elections next year, when the climate for an out-of-court settlement could be more favorable than at present.

The exact charges in the matter will not be known until the appeals court lifts the veil of secrecy, which will certainly have to happen soon for hearings on the matter to be held.

But it is clear at this time that a new note of personal attack and bitterness has entered the case, which is already marked by charges of misconduct brought by lawyers on both sides of the case.

Those charges will be aired in open court, but the date for that hearing, which Edelstein indicated may affect the professional futures of the lawyers involved, has been postponed indefinitely at this time.



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# Legal, Technical Efforts Required to Stop DP Crime

By Edward J. Meide  
of the CW staff

ITASCA, Ill.—While-collar crime is a "joint problem" which must be solved by both the legal and technical communities, especially since many major financial crimes are now aided by computer technology, the attorney general of the state of Illinois said here recently.

In the keynote address to the annual conference of the Association of Computer Programmers and Analysts (ACPA), William J. Scott said he is "not sure we can stay ahead of the criminals" in developing "effective defenses against computerized financial crime."

"We must put our heads — and machines — together," he told attendees.

"We must draw on the specialized knowledge in our two fields of endeavor to counteract a cancer growing within our society," Scott said, adding the "cancer" of white-collar crime is "often undetected and, even when the discovery is made, there is frequently no adequate treatment yet available."

## Law Too Lenient?

The maximum penalty for financial crime in Illinois is one to three years, even though damages can run into the billions and "wipe out the life savings" of many individuals, Scott said.

More than \$2 billion worth of bogus insurance policies were created for Equity Funding Life Insurance Co. of Elmhurst, Ill., Scott recalled, with a subsequent "run-up of the stock of the insurance company's parent, Equity Funding Corp.

of America."

Pensions, profit sharing and annuities depend on the safety of assets which are invested largely in securities, Scott said. If those securities turn out to be phony, as they did with Equity Funding, then "what relief will there ever be for the elderly people whose retirement is cruelly undermined?"

The Equity Funding parent "showed how far [criminals] can get, even without full utilization of computers," Scott said.

## A Pencil Fraud

Although the Equity Funding situation existed for about nine years, Scott continued, the trustee in bankruptcy has now concluded the scheme was "actually quite unsophisticated in both design and execution."

It was "essentially a pencil fraud, perpetrated by bogus manual accounting entries," with no support for the rapidly mounting earnings figures the company was reporting. "Better auditing would have detected this," Scott said.

The trustee concluded the conspirators' "seller-dealer, hand-to-hand" efforts demonstrated a striking lack of analytical insight and forethought," Scott said.

The trustee has also debunked Equity Funding as a computer fraud, he continued. Although the conspirators generated "reams of printouts of insurance policy record to support the fraud," there was little or no underlying detail created for these printouts, Scott said.

In fact, the conspirators "didn't even rely on their own printouts" when it

came to making accounting entries. They "brazenly recorded fictitious income figures simply by writing them in," he said. Scott quoted from the trustee's reports: "While the computer may have generated a paper 'screen' for some aspects of the fraud, in fact, the role it played was no bigger or more complicated than that played by the company's adding machine."

All this has caused him to talk and to worry about "massive computerized crimes that could have truly cataclysmic consequences for individuals, businesses, banks and indeed our nation's entire economic and social fabric," Scott said.

## Hope in Pooled Talents

"We lawyers cannot cope" with the problem alone, "nor can computer experts," Scott said, adding "our only hope is to pool our talents."

He also quoted from a Justice Depart-

ment report on white-collar crime, which said that, while much is known about controlling, auditing and monitoring most people, "we have only the most elementary knowledge of how to audit computers and those who have learned how to use them."

"The search for control procedures is complicated by the accelerating rate at which the computer art is developing, a rate which makes controls obsolete almost as quickly as they are developed."

"Existing control methodology is not adequate for internal control or for investigating agencies or for regulation by regulatory agencies," the report noted.

An "inadequate remedy for the potentially prodigious wrongs of computerized financial crimes will leave our nation, our fellow citizens and indeed our own families and friends subject to chicanery that could truly shake the foundations of America," Scott said.

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## Litigation Trails Telex-IBM Pact

(Continued From Page 6)

Jan. 24, 1975: The Denver appeals court reversed the decision of the lower court on the basis of the arguments in IBM's counterclaim.

Telex was fined \$18.5 million in compensatory and punitive damages on the

theft of trade secrets charge. In its decision, the appeals court said that Christensen, who made the original award to Telex, erred in his definition of the market and that IBM practices were just competitive, not predatory.

March 5, 1975: Claiming the appeals court erred in defining the relevant product market, Telex filed for a rehearing of its antitrust suit against IBM.

April 9, 1975: The 10th Circuit Court of Appeals denied Telex's petition for a rehearing.

June 11, 1975: Telex filed an appeal of its antitrust suit against IBM with the Supreme Court.

Oct. 3, 1975: Telex withdrew its appeal to the Supreme Court in exchange for release by IBM from the \$18.5 million judgment against Telex for theft of IBM trade secrets. No monetary payments by either side were involved in the settlement.

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# Management Problems Promoting Women Self-Imposed

By Molly Upton  
of the CW staff

SAN FRANCISCO—"Seek and ye shall find women qualified for management positions" was one of the messages from a session on "Promoting Women? What's the Problem?" at a recent conference here.

Solutions to the problems of promoting women lie within the realm of both management and the employee, panelists told over 100 attendees, of whom nearly half were men.

Lack of objectivity in evaluat-

ing qualified people, stereotyping and failing to try to find qualified individuals are some of the obstacles to promoting women that management imposes on itself, panelists agreed. In addition to the blockades presented by management, employees face the problems of overcoming covert discrimination, conditioning of various forms and lack of visibility, they said. Promoting women is "no game for cowards," Esther Williams, a specialist in metallurgy at Lockheed Missiles and Space Co.,

said.

"For a long time to come, the person helping promote women will have problems, but it's worth it," she said.

These executives are apt to have their decision subject to rebut comments and innuendos, Williams said, adding "it takes a really big executive to take the responsibility."

Management often lacks the objectivity to evaluate qualified people, she said: "If you look, you could find unrecognized talents."

"When reading a resume, don't look at the name," Carolyn Morris, customer engineer manager for the 2000 series at Hewlett-Packard (HP) Co., suggested. "Somewhere the E.E. or the M.B.A. degree doesn't look quite as good when it belongs to a woman."

"The real failure is the failure to try" to find qualified individuals, Jean Wright, compliance officer with the Department of Defense, said. The top-down approach works well, she observed. In firms where the top manager

has told department managers their performance review will include an evaluation of how well they have complied with equal opportunity guidelines, they succeed in finding qualified women, she explained.

Wright agreed the lack of visibility is a real problem. "Often management forgot qualified women were there. They were scored before the race started," she said.

Although management is known to plead that there is a lack of women with the needed technical skills, the job requirement should be examined in depth to assess how much recent technical experience is really necessary, Williams said.

To augment the number of women considered qualified in technical fields, Wright suggested firms institute a "cadet" program, hiring high school boys and girls equally for part-time jobs.

Companies could put more women into their training programs. This gives the firm a chance to evaluate not only their qualifications for the job, but their ability to cope with "the unequal problem of being a woman," Williams said.

Companies must assume a more active role in helping women advance, Jim Harper, human resources manager at Tektronix, Inc., warned. A company not taking this responsibility may lose its people to a neighboring firm, he said.

"One of the most devastating stereotypes for women is that of 'temporary' employee," Williams said. She refuted this image with statistics from the Department of Labor showing the average length of service by women is comparable to that of men.

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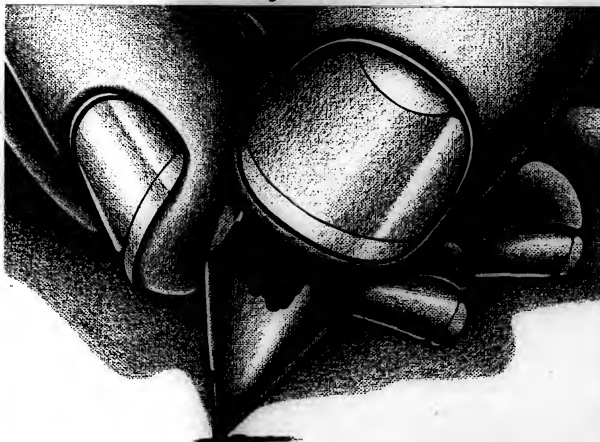
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## In Legislative Hearings

# Corporate Positions on Privacy Missing

By Edward J. Bride

Of the CW staff

ITASCA, Ill. — Representatives of business are often "unable to state a corporate position" on the issue of computerized files when called to testify in front of Federal or state government committees looking into privacy legislation, a state legislator claimed here recently.

In a speech before the national conference of the Association of Computer Programmers and Analysts (Acpa), Illinois state senator David J. Regner (R-Mt. Prospect) said the Illinois General Assembly considered five privacy bills during the past session.

While none has passed, yet, these five "represent only the beginning of individual efforts," he predicted.

"In many of the public hearings," Regner said, witnesses could not state corporate positions "because of conflicts within their organizations. Other organizations would testify, but the impact of proposals could not be quantified."

"The lack of information about our information systems was considerable," Regner, the chairman of the Illinois Senate's Legislative Information Systems Committee, said.

Company management needs input from technicians, he said, because "in most instances, management does not know the extent of the gathering, use, or dissemination of personal information in its organization."

Furthermore, Regner indicated management often does not know "what controls are currently utilized to prevent loss or injury to its data bases" and does not know "the administrative procedure necessary to allow access to data."

### 'Serious Abridgment'

Despite all this, Regner referred to the Justice Department's requirement for dedicated law-enforcement computers at the state and local level as "a serious abridgment of states' rights."

"It has been estimated these rules will cost the State of Illinois \$50 million, excluding local governments," Regner commented.

If the rules are allowed to stand, there is the "danger" of precedent, with other federal agencies possibly requiring dedicated systems if local or state governments wish to participate in other federally funded programs, he said.

"State and local governments must be allowed to fragment their data processing into many small

dedicated shops," Regner said. Instead of executive regulation, such as the Justice Department

## CW At Acpa

policy, Regner said he prefers legislation as an aid in protecting individual privacy: "Though legislation cannot do everything,

legislation is the best method of assuring individual privacy without creating an environment of exorbitant costs."

### Safe Action Plan

To aid DP management in identifying the potential weaknesses of DP systems, Regner called attention to the Secure Automated Facility Environment (Safe) project in Illinois, part of the overall IBM security project.

(Continued on Page 11)

## More Legislation Predicted

ITASCA, Ill. — The current interest in personal privacy will probably lead to legislation on criminal justice information systems and individual taxpayer privacy, according to the acting director of the President's Domestic Council Committee on the Right of Privacy.

George B. Trubow also said "tremendous behavioral analysis" is possible with the imminence of point-of-sale funds transfer systems.

There are "awesome potentials" but also "tremendous advantages," he told about 100 attendees at the annual conference of the Association of Computer Programmers and Analysts (Acpa).

Claiming the "checkless, cashless society is coming right down the pike, and computer people are right in the middle of it," Trubow also said the issues of personal privacy are "manageable."

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## But Agreement Ends There

# Test of DP Knowledge Seen Necessary

By Edward J. Bride  
of the CW Staff

ITASCA, Ill. — Divergent opinions on the licensing issue were heard at a session of the fifth annual conference of the Association of Computer Programmers and Analysts (Acpa) here recently.

About the only issue on which there was agreement was the need to establish an accepted and acceptable test to measure "acquired knowledge," as opposed to competence, which cannot be measured.

Currently, the Certificate in Data Processing (CDP) is the most widely accepted document for such measurement, but

vinced so few?"

The plethora of letters to various trade publications is evidence the issue is no longer considered trivial, he said.

Martin A. Morris, a board member of Acpa and chairman of the conference, said neither a license nor a certificate can

commonly accepted practices."

Sitting for the CDP exam is a "personal ego trip" for some people, Morris said.

The CDP "has made me aware... that as a processor of information, I potentially control an awesome weapon of destruction, if used in an improper manner," he said.

Although many people believe the licensing controversy and renewed interest in the CDP is due to concern over the privacy issue, Morris called certification for him "a self-discipline."

### 'Ugly Stigma'

Certification procedures "should be controlled by representative professional groups within the discipline in question and never by a governmental body," he said.

Once the government gets involved,



Morris

Acpa photo by J. Brown Harris

"the quest for true professional recognition passes into oblivion, never more to return, and the ugly stigma of licensing becomes branded on that occupation," Morris said.

The stigma is "ugly" because licensing has traditionally "served to shut the entrance doors to many occupations, while providing little, if any, professional recognition for the individual license holder."

## CW At Acpa

guarantee "successful, competent or ethical performance."

The time has come "to call a moratorium on the rhetoric" and to "start to do something constructive for our industry," Morris said. He agreed with other speakers "the industry needs a set of



Casper

Rudland

only a small minority of DPeres are CDP holders.

Licensing at some point in the future may be desirable, but is "premature" today, Fred H. Harris of the Institute for the Certification of Computer Professionals said.

However, "we are ready for licensing," according to Sam Rudland, executive vice-president of the Florida Society of Certified Data Processors (FSCDP).

FSCDP was chartered expressly to push for state-level licensing, and the bill which the group caused to be introduced into the state legislature will probably undergo committee hearings starting this week, Rudland said.

Voluntary licensing won't work since politicians don't like to support "small groups of voters," Rudland said. And regulatory boards are "inflationary... they seldom pay their own way," he continued.

Noting that much of the licensing controversy surrounds the privacy issue, he said industry cannot use media such as the *Federal Register* to promulgate the existence and types of data bases, leading to increased costs in the private sector.

### Uniform Codes Needed

Aligned somewhat with Rudland was Dr. Gary Casper, a board member of the national Society of Certified Data Processors (SCDP).

While Casper feels the chief issue is the formation of a "legitimate profession, regulated to protect the public interest" and give the profession tools for improvement, he said licensing is indeed premature until uniform codes of practices are established.

He proposed cooperative workshops among the various societies to set such a uniform code. Then, the process of licensing could "establish immediate legitimacy" for the profession and lead to improved standards, Casper said.

"Licensing is far from dead, and we will continue until it becomes fact," he said.

The concept of regulation is probably accepted by computer people today; the divergence is on the form of regulation, i.e., by peers (voluntary certification and/or licensing), by employers or by law, Casper said.

Regarding all the public meetings and press coverage on the issue, Casper asked: "How could so much discourse in the past year have produced so little and con-

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# Formal Career Pathing 'Essential' to Management

By Edward J. Bride

ITATSCA, Ill. — Aside from the psychological and occupational benefits provided to technicians by formal career-pathing procedures, a DP career program is "essential" if "management is to carry out its mission with efficiency and to work through people."

This was the message presented to attendees at the annual conference of the Association of Computer Programmers and Analysts (Acps) here recently by David R. Skeen, DP director at the Office of Naval Research.

It is "painfully clear" computer people "do not have a clear overall view of their vocation" and management "has not identified and implemented a program for them to use as a guide," Skeen said.

In this age of high technological sophistication, it should be "almost self-evident that such action should be undertaken,"

he said.

The Federal ADP Users Group has spent nearly four years identifying a career structure and corollary steps for a career development program, he noted. The group has, in fact, formed a special interest group on career development to design a structure that can become "a stan-

## CW At Acps

dard in the computer industry" as well as provide a "foundation for identifying criteria for future certification," Skeen reported.

Skeen was but one of many speakers to touch on the certification issue, with most of them agreeing on the need to measure acquired knowledge (see story

on Page 10). Nearly all who mentioned certification also expressed frustration at the failure of the Certificate in Data Processing (CDP) to achieve industry respect and acceptance.

Defining a base of knowledge "is the key to any certification program," Skeen commented, since "this presupposes identification of a position structure, a systems life cycle for DP projects, skills and training criteria necessary to support such a base."

But certification is not the only goal of this approach. "The prime objective of management," he said, "is to carry out its mission with efficiency and to work through people," and a formal program for career pathing is "essential to this end."

Within any organization, the major steps necessary to develop a career development program would, he said, require the following:

- Identifying tasks in a "systems life cycle matrix."
- Developing an organizational framework, beginning with career groups which specifically identify career ladders.
- Developing position descriptions,



Acps Photo by J. Brown

David R. Skeen

which requires "listing the knowledge and skills necessary for performing at each designated level."

• Setting forth the criteria for performance, e.g., training, experience, testing and proficiency.

• Implementing the career development model "by first inventorying those skills which presently exist in the organization."

• Evaluating and continually updating the program.

The first four steps — task identification, framework, position descriptions and performance criteria — are "the foundation upon which certification is built," Skeen continued.

These "must be accepted by the computer industry in general if certification is to provide meaning to its participants."

## Corporate Positions On Privacy Missing

(Continued from Page 9)

Safe came up with a 10-step action plan that can be used by the general DP community, and Repner outlined these steps as follows:

• One: Review information system requirements. (What data is being collected and why is it needed?)

• Two: Analyze confidentiality and criticality of information. (What are the legal, social and corporate responsibilities regarding information privacy and security?)

• Three: Assess vulnerabilities and risks. (What specific vulnerabilities confront the organization's information systems and resources?)

• Four: Investigate technological safeguards. (What technological safeguards are presently being used by the organization and others?)

• Five: Budget for information privacy. (What are the costs involved in the implementation and operation of a security and privacy program?)

• Six: Organize for information privacy. (Will a new organization be required or can the objectives be achieved within the existing organization?)

• Seven: Establish individual accountability. (Who has the need to know and to change and the right to expunge information?)

• Eight: Implement technological safeguards. (What is the priority of the information privacy and security objective compared to other organizational objectives?)

• Nine: Create a privacy- and security-conscious environment. (Is the organizational objective supported with procedures, policies, practices and education?)

• Ten: Audit. (What improvements can be made to make security more efficient and effective?)

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# MEMOREXPERIENCE

## Editorials

### No Resolution

The decision of Telex Corp. not to pursue its antitrust suit against IBM is at once both understandable and regrettable.

The decision is understandable because pursuing the case would have essentially meant betting the future of the company on whether the Supreme Court would choose to listen to the Telex arguments.

It is clear IBM would have immediately called for Telex to pay the \$18.5 million Telex would have owed IBM if the Supreme Court had decided not to hear the case.

Clearly, Telex, even though marginally profitable, could not have afforded to make such a large payment in one lump sum. Therefore, the Supreme Court's decision not to hear the case would have meant instant bankruptcy for Telex.

The firm, which has been the most aggressive to date in its pursuit of antitrust matters against IBM, obviously felt it could not risk all for the chance to gain a place on this year's Supreme Court calendar, which promises to be one of the busiest in years.

The firm's bankers probably had some influence in the decision, whether that influence was clearly stated or just implied, since bankers usually worry more about the possibilities of loan repayments than about abstract justice or long-shot gambles. But the decision is regrettable since it leaves all of the issues raised by the Telex case unresolved.

There were clear and sharp differences between the district court and the appeals court over the case, and those differences could be resolved only by a final determination on the part of the Supreme Court.

That determination is now impossible and everyone in the computer community loses because of it.

The producers of equipment lose because the final groundrules for their operations in the computer field are not clearly outlined—and that goes for IBM as much as for the producers of independent equipment and other mainframe makers.

Users lose because the future of the independent peripherals business is not clear and will not be until some of the other suits now pending against IBM are tried and finally resolved—a process that will take years.

The public loses because an important issue in antitrust law and policy has been left unresolved by the highest court in the land.

Telex should have pursued the case to its ultimate resolution, but the ante was just too high. While we understand, we regret the decision.

### Where Was the Government?

One of the mysteries of the entire Telex Corp. appeal to the Supreme Court revolves around the lack of action by the U.S. government in the case.

Since the government is trying IBM on some of the same grounds as Telex did, it would have seemed logical if the government had filed a "friend of the court" brief with the Supreme Court asking it to take up the Telex appeal.

But it did not, and there is some feeling this lack of support on the part of the government helped lead Telex to its decision to withdraw the appeal at the last minute.

Clearly, whether or not the government support would have bolstered the courage of the Telex officers, the government should have acted.

The reasons behind its decision not to act will apparently be one of the unresolved mysteries of the case for a long time to come.

## SOCIAL SECURITY ADMIN. SSI DATA PROCESSING DIV.



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## Letters to the Editor

### Privacy Can't Be Legislated;

#### HEW Management Decision Sound

The editorial in the Oct. 1 *Computerworld*, "A Sad Commentary," is indeed in that it implies "privacy" can and should be explicitly legislated, and it calls what appears to be a sound Department of Health, Education and Welfare (HEW) top-management decision "ramming" its way through the opinion in the law.

I say an orchid to the Office of Management and Budget (OMB) for its excellent set of guidelines, which recognizes the rights of the heads of super-agencies as well as smaller organizational entities. If CW's line of reasoning, instead of OMB's, were followed in the private sector, if and when privacy legislation applies, organizational entities of a diversified corporation having vastly different functions could be forced out of business.

I hope HEW's decision "to provide tighter controls by centralizing and maintaining that control at the secretary's level" is not subverted by its 11 subunits, is highly successful and becomes a federal standard of sorts.

Charles E. Emswiler

Richmond, Va.

### Background on DBMS Incomplete

The essential point in the article, "IMS Works for University After DBMS 'Rules' Bent," [CW, Oct. 1] was properly made that IBM's IMS has been successful for us as a data base management system (DBMS); however, the background was oversimplified and incomplete as written.

First, in selecting a DBMS, we chose not to conduct an exhaustive in-house testing process, but rather to utilize a team of our most experienced personnel led by the director of the data systems center and the manager of systems programming.

The most important factor in a DBMS selection is an understanding of the data which will be stored and the potential uses of that data. Our intent was to review all relevant information concerning software being offered as well as communications with system users when appropriate. Our analysis was concerned with the usability, sophistication, security, support utilities, reliability, balanced data base and communication facilities and potential enhancements.

While many systems have valuable features, we felt the IMS product most closely suited both our current and long-range requirements.

A second very important point must be made concerning the function of a data base administrator (DBA). We do, in fact, acknowledge the importance of such a concept; however, during the

initial stages of a DBMS development, we have chosen to draw on the in-depth knowledge our experienced analysts have concerning the information processing requirements of the university.

We have been evolving the function of a DBA over the past two years by first establishing a systems coordinator function which, through the utilization of structured walkthroughs and design workshops, maintains, encourages and guides the integration of development activities and is responsible for overall system performance and integrity.

As the systems become more extensive and complex, the function becomes more structured and formalized along the lines of a classical data base administration function.

Finally, any so-called DBMS "rules" should, in fact, be bent or broken if, after careful analysis, such action will result in the most effective DBMS for the organization and environment involved.

With the early availability of a comprehensive data dictionary system and active participation of our customers through a specialized task team structure, we have avoided having the technology dictate the development.

Instead, we have the horse before the cart in developing information systems first, which then utilize DBMS facilities to provide a more valuable resource than would be possible from concentrating on the technology to be used.

Gary L. Shaw

Michigan, Student Data Systems

University of Michigan

Ann Arbor, Mich.

### CW Has Duty to Inform Users

I am surprised at Gerald L. Bortle's letter [CW, Oct. 1] with respect to the announcements and policies recently established by Honeywell.

It is quite evident Bortle is either an employee of Honeywell or has a very poor understanding of the impact Honeywell's new policies have on the Honeywell user, the values of the system and its own vendor independence.

It is, further, obvious he does not comprehend *Computerworld's* obligation to inform DP users of any and all critical activities either announced or carried out by the vendors of DP equipment.

John F. Allen

Sausalito, Calif.

### Where's the Computer Angle?

Thomas Moonhammer is a very funny man. He preaches determinism for women and free will for men. He seems to think [CW, Oct. 1] that women have better sex lives than men.

But what has that got to do with computers?

David Ames

Watertown, Mass.

## Letters to the Editor

### Grosch Right: NC

#### Never Entered DP Mart

In the past several months Herb Grosch's comments on NCRC and Xerox have prompted indignant letters from such luminaries as William S. Anderson (of NCRC) and Jim Buren (of Houston, Texas). His foresight has prevailed, as Xerox indeed closed down its computer operations.

Now we of the DP staff at School District No. 205 in Harvey, Ill., announce, "As far as we're concerned, NCRC never really entered the computer field." So you see, Grosch was right all the time.

We have had a Century 200 for more than two years. Since the computer was installed, we have had every problem imaginable.

Some days were worse than others, and to cite examples: (1) the service rep lost both of his diagnostic disk packs to head crashes on different drives within the same half-hour period; (2) within 15 minutes, the punch unit, console typewriter and printer went down.

The printer actually went up in smoke and was down for the better part of four days. During this time it would shut itself off and later come back up, to the disbelief of the service rep.

Also, both card readers would quit (we have two just to be safe) at the same time.

The above are the heavier problems, to be fair about it. Smaller versions of these have occurred regularly since we replaced our

1401. The longest we have ever gone without making a service call is two weeks.

We are firmly convinced NCRC should stay with cash registers...

Ed Tunstall  
DP Manager  
Thornton Township High School  
Harvey, Ill.

### Arrogant Attitude

Here is another example of poor systems design resulting in inflexibility in changing a billing date, similar to those incidents mentioned in the Taylor Report recently.

The credit manager at Famous-Barr (one of the largest department stores in St. Louis) informed me that the store bills strictly on the basis of last name and that it is impossible to change my billing date without changing my name.

How do I proceed from here? How can an individual bring pressure to change this arrogant attitude? A program change may be made, but only if the company wants to make one.

Naturally, I plan to get around it by not shopping at that store in the future, but, again, who cares?

Keep pounding away at this unprofessional approach (of course first management has to authorize a policy change) toward system design.

As long as this type of attitude prevails, we in the industry should have talk about professionalism.

W. Robert Walker  
St. Louis, Mo.

## Good Government

I recently received a review of 1974 EDP activities in the Canadian government and was very much impressed by both the completeness and the conciseness of the document. It refers to experiences dating back to 1961—punched-card days—and goes two fiscal years into the future. There is no comparable document for the American federal sector; no plans are afoot, as far as I know, to produce one; indeed, the huge effort required would really be wasted, since Washington (unlike Ottawa) has no mechanism to control EDP expenditures or personnel practices even if it had an accurate report of past situations. We were too early—and are too big, and too messy.

Canadian EDP costs rose 21% per year from 1961 through 1967, when unit-cost equipment was being replaced by computers, and then by 27% annually through 1973 as new computerized projects were activated. Present plans envisage a growth of only 20% for the immediate future, but the Treasury Board cautions that predictions in the past have proved conservative.

Total costs are running about \$225 million annually: 43% salaries, 34% equipment, 4% supplies (total direct costs hence being 81%), and 19% indirect (benefits, travel, and so on). This is probably about one-twentieth of some U.S. federal figure; no one knows within a factor of 1.5, maybe even 2.0.

Computer services are 50% batch, 35% on-line, 8% time-sharing, 2% batch editing. Other machine-based services (punched card, OCR, COM, etc.) run about one-half the computer amount—that is, about \$50 million per year as against \$100 million for systems and programming is \$60 million, and training supplied outside the shop, \$1 million or so.

The departmental organization in the

Canadian central government is somewhat different from the U.S.; National Defence accounts for only 15%, Supply and Services (sort of like our GSA, but running many service-bureau-like computer operations as well as much procurement) is 12%, the tax boys about the same, and the RCMP (the Mounties) about 9%—much more than our FBI, while Defence is much less than ours.

On a cost basis, IBM has 60%, Univac and Honeywell 9 each, Burroughs 7, DEC almost 5, and Control Data 3. Of the small computers, DEC accounts for \$25 in dollar terms, followed by Hewlett-Packard with 14, Data General with 9, and Interdata with 7. But as in the U.S., the big babies account for most of the expenditure: almost 97%, in the Canadian case.

Normally I don't do a straight reporting story like this, or at least not in this column. But it seems to me we have here very complete and accurate figures for a major North American user, not all worshipping like Washington (whose data we don't have anyway, and couldn't trust). Arguments like the age-old ones about hardware cost trends, in-house versus external facilities, thus 3, of the small computers, are more useful if based on current, unprejudiced facts. The Canadians have supplied us a very nice set.



Herb Grosch

## Prospects Improving for Nonprogrammer Programming

The possibility of "nonprogrammer programming" spreading outside the restricted field of interactive queries has increased recently, both as a result of 1975 hardware and software successes and of new discoveries as to how data is used.

What the impact of everything put together will be by 1980 is anybody's guess, but the work is now being pushed both by universities and computer vendors, so something is certainly going to happen.

From a hardware standpoint, the successes have been based on the development of automatic tape libraries using high-density packing of data. This dates back some years, and both events were covered here at the time of their development.

They have since become an active market product, now referred to as the "flexibles" to permit the inclusion of later products such as the honeycombs of the IBM 3850 as well as the Xytex (now California Computer Products, Inc.), Ampex Corp. and Control Data Corp. systems.

In the new nonprogrammer programming mode, instead of simply handling data processing systems on a faster basis, these expandable data libraries are used to hold generous-sized data bases of files, data organization and whereabouts is handled only by the system and not by any programmer.

Thus a file may be held only in the flexible library (thus making it unavailable for a minute or two) or may be promoted by the data base system to some form of disk with a hundred times faster access.

Even newer hardware such as the electronic or bubble memories are expected soon to provide another staging position between the processing main memory and the disk-type storage with which we are currently familiar. This will leave us with a four-stage hierarchy of memories with no operator involvement.

Software and Snow White

Software for handling these file movements and the automatic selection of required parts of the files for actual processing has also been progressing fast under the general area of query languages.

The most successful techniques at present bear the forbidding name of "relational data base" languages. Under these systems, programming required for some specific application starts only after the question (or instruction) is given.

The programming is handled automatically in a generation of automatic programming that far surpasses the 1960 Cobol-type level of automatic programming, while having none of the rigidity associated with 1970's packaged applications of today's computer users.

The basic simplicity of the nonprogrammer programming approach can be seen by taking the old Snow White fairy story question and knowing how the queen's information system would have handled her imperious demand, "Mirror, mirror on the wall, who is fairest of them all?" Clearly, the first word, mirror, is ad-

ressed to a terminal device with some audio capability. All this does is activate the system, get approval of the passwords and security, etc.

The second group, mirror on the wall, defines the output terminal to be used—in this case a soft-copy operation because the queen didn't want to have unnecessary documentation around if anything went wrong.

With the system alerted and the output terminal defined, it is ready to look for the actual instructions as to what has to be programmed. The instruction comes: "Who is fairest of them all?"

As soon as this instruction is received, the queen's information system has received enough data to program itself to start its task. It has its order to:

- Find a file on the wall.
- Extract the record descriptions held in the file and use the system dictionary to find if any field or field combination is missing or ambiguous in terms of "fairness." Suitable fields would be "judicial temperament," "skin color," ranking in Miss America Contest, etc.

- Scan all entries in "all" file, comparing the fields chosen, and determine for each field the "fairest" individual listed.
- If more or less than one individual meets the criteria, an ambiguity routine.

- If one and only one name is produced, obtain the salutations appropriate for the terminal "mirror on the wall," format the name produced into it and display it on mirror on the wall.

Now, look at that again. Is there anything there that cannot be handled in a minute or two, provided there are no operational problems in getting the "all" file? There just aren't any insolvable logical problems, and so the queen's

query can be handled without it ever being touched by a programmer. And, logically, so could a monthly sales report.

### Efficiency a Must

However, simply to be able to handle problems such as these without having direct programming, of course, does not mean they will be handled that way. It must also be economically worthwhile to do so.

The rate of information needs has much more "clustered" together than has been suspected, which means the efficiency of easy arguments about where to keep various files will be unexpectedly fruitful.

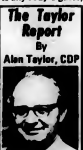
For instance, in August, a University of California researcher, R.D. Hackworth, was watching the frequency with which the same record was extracted twice or more during a single day in a California county system.

The expected average hit rate was expected to be about 1:1. That is, it was expected there would be 11 or 12 accesses to any 10 records that were accessed during the day.

The rate was found to be about 2.0. That's a complete order-of-magnitude improvement over what was expected, and orders of magnitude improvements are what makes efficiency.

So that's a current news about the prospects of programmerless programming. The implications of these developments will be reviewed later, and your views on them are invited.

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The Report  
By  
Alan Taylor, CDP

# Satisfied S/32 User Surprised by Others' Complaints

By Dan J. Dybdew

Special to Computerworld

I continue to be surprised when I read in *Computerworld* about some IBM users being unhappy with IBM. Everyone we've dealt with at IBM has been fantastic.

Bradshaw Gravel Supply placed its order for a System/32 about two weeks after its announcement in January. During our selection process, we were impressed with the System/32's capabilities, flexibility and competitive price.

The Contractor's Management Accounting System (CMAS) was also ordered to provide payroll, job costing, accounts payable and general ledger accounting for four companies — a paving contractor, a sand and gravel contractor, a concrete supplier and Bradshaw. This meant that, for the first time in their history, these four companies would be utilizing the same processing system.

About two months after placing our order, our System/32 rolled off the moving van and into our machine room. Forty-five minutes after the customer engineer arrived, our system was operational; 15 minutes later we keyed in general ledger master file records.

Our customer engineer has had to come out only twice since then — once for a minor repair and once to upgrade our printer from 50 line/min to 155 line/min. Data file conversion on a "part-time" basis required about four weeks, with full operating ability reached after another four weeks. The CMAS package has been improved since its first issue, and as a programmer I am impressed with its flexibility.

We have nearly completed writing our own accounts receivable system, which will update the CMAS general ledger and job costing. Incidentally, we plan to market this package to other System/32 users

in the near future.

Last year, two employees spent two and one-half days each week processing the

payroll to perform higher level work.

When the employee for one company worked briefly for one of the other three companies before the System/32 was installed, a long series of journal entries and job-cost postings had to be performed. Now such transfers are all handled by CMAS, which results in great savings in time and provides a better audit trail for our auditors.

We are a satisfied user of the System/32. Dybdew is installation supervisor and programmer at Bradshaw Gravel Supply, Inc. in Arvilla, N.D.

## Reader Commentary

payroll for just one company. Now one operator runs the payroll for four companies in about two days, freeing the employees who formerly processed the

## Women Don't Want Promotions

By Jack M. Wolfe

Special to Computerworld

Much has been written about discrimination against women in DP. Salary differences cited in programming, for ex-

ample — \$265 for men against \$257 for women (CW, Aug. 6) are attributed to discriminatory practices. No recognition was given to length of employment. In my experience, I have observed much more voluntary termination of employment by women programmers than by men. Women programmers have resigned when their husbands' employment changed to another city, for maternity reasons, to change careers or to take positions as teachers, for example, for which they prepared originally.

The average period of employment of women programmers is substantially less than that of the men, and the average salary differential reported appears far more likely to be attributable to this factor than to discrimination against women programmers.

### Don't Want to Be Supervisors

Regarding promotion to supervisory positions, I have observed that most women programmers I have known did not want such positions.

Project leaders and managers are generally expected to stay after hours for conferences; to many women programmers, definitive starting and stopping times are utterly essential because of their home responsibilities or social life.

Managers, too, are often required to work nights and weekends for special computer runs. This kind of schedule is more than can be undertaken by a woman because of her family and social requirements.

It appears likely the smaller representation of women among supervisors is attributable to a substantial extent to the fact that many capable women do not choose to make their family and social lives subordinate to the responsibilities of a supervisory post in programming.

In a random sample consisting of about 1,000 job applicants who had majored in mathematics or computer science in college and who had taken a programming aptitude test I developed, 60% were men and 40% women. These persons were tested in 98 companies and government agencies in the U.S. and Canada, and the test was validated by a U.S. federal agency.

While the women's ratings on the test were somewhat higher than the men's, the difference was not sufficiently large to be considered as established with statistical significance.

I believe the difference in employment figures is merely a reflection of the fact that more men than women apply for programming positions and should not be viewed as evidence of discriminatory practices against women applicants.

In business programming, for example, a background in accounting may be desired by the employer, but the number of men students in accounting in college is far greater than the number of women students in that major.

Applying the principle of Occam's razor, I do not find substantiation for the hypothesis of discrimination against women for employment in programming.

Wolfe is a professor of information sciences at Brooklyn College.

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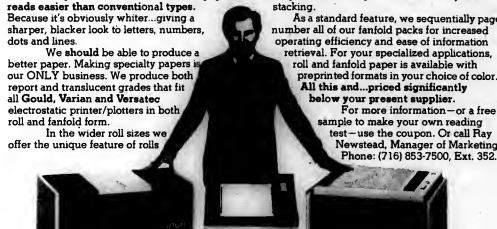
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## Use in Contracts Important

## Definition of 'Software Program' Can Vary

By Roy N. Freed

Special to Computerworld

A software program is a software program—or is it?

Our question for today really is, "What does the term 'software program' mean for legal purposes?" For what legal purposes? What a way to start a column!

Webster's New Collegiate Dictionary defines the noun "program" as a plan for the programming of a computer or a sequence of coded instructions that can be inserted into a computer.

That is a definition for general purposes—to serve the diverse group of people who might refer to a dictionary. It probably is insufficient for our needs for this discussion. It will most likely turn out to be actually misleading.

There are many situations in which it is essential to define the term "software program" for legal purposes. But that universe still is too broad for us to work with. We must persist and ask, "For what legal purposes?"

## Different Purposes

There are a number of different legal purposes for which a definition of that term is required. They include, briefly, such diverse considerations as the determination of how various tax laws will be applied (income, tangible personal property sales taxes); how people can secure proprietary interests in software programs to enable them to prevent their unauthorized use and what criminal laws apply to thefts of software programs; what liabilities marketers of software programs have to their customers and to third persons who might be harmed by their use and the related question of how they can get insurance coverage for those exposures; and how the antitrust laws might apply to business arrangements of marketers of software programs.

Each of these facets is worthy of at least one separate column and will be so treated. Hence, let's use this column to develop an analytical approach for identifying alternative possible definitions and their respective propriety and to point out how to benefit from that operation.

The term "software program" can be used to mean a process for processing information automatically by an electronic digital

computer.

Such a process would be analogous to the myriad familiar processes for processing tangible materials, such as refining crude oil, reducing ores, producing paper, synthesizing iron and making automobile engines. I consider this definition to be very appropriate in many legal circumstances and use it very often.

Alternatively, the term can be, and frequently is, used to refer

In contrast, if the transaction is deemed to be the rendering of services rather than the furnishing of goods, then the supplier is liable for only the harm that resulted from its failure to exercise reasonable care.

In the tax area, if a tax applies to tangible personal property and not to intangible personal property, to services or to licenses to practice processes, then one label exposes someone

We must also recognize we engage in legal argumentation when we draft software program license agreements, as well as other legal documents. We are writing scenarios or setting stages for the making of important legal decisions by courts, tax collectors, and others similarly situated.

In summary, it is essential to examine phenomena and identify possible legal characterizations, then to select the characterization considered to be the most desirable and finally to talk about it in legal documents in a way that enhances the characterization.

Contract drafting is not an activity to be performed cavalierly. The consequences of mistakes can be severe.

## Choice Exists

In approaching this matter of defining the term "software program," nonlawyers should recognize definitions do not always follow invariably from particular physical phenomena. Often there is some ambiguity of understanding, and hence a choice exists.

Knowledge of the various legal consequences of the alternatives can help in selecting the one to opt for and promote by legal argumentation. Computer specialists also should recognize that, in many situations, a thorough knowledge of the facts from a legal perspective is indispensable in order to adopt a proper definition.

Especially in the computer industry, technical jargon, which has been adopted without attention to the legal consequences, frequently obscures the facts and must be avoided to avoid its misleading effect. We must not take computer buzzwords literally in making legal assessments.

We must develop careful understanding of the nature of the phenomena or properties involved.

## Connotations Vary

Each of those characterizations has very different important legal connotations because of our prevailing scheme of legal rules relating to transactions, properties and relationships.

It might look some readers to take the different rules applicable to tangible personal property, goods or products; to intangible personal property; to the rendering of services.

But—until our legal structure is altered—that's the way we have to talk and classify circumstances to determine their legal significance.

We unto any who ignore legal consequences. The adverse impacts often can be severe.

Speaking very generally, if something is tangible personal property or goods, then taxes and liability rules pertinent to that type of property will apply.

If an activity entails the rendering of services, quite different legal impacts in those areas could be encountered.

Furthermore, if a transaction constitutes the licensing of a process, still other legal consequences follow.

Let me give some examples. If something is called "goods" and if harm results from its use because of a defect in it, the manufacturer might be liable without regard for the fact that no amount of care would enable it to avoid the defect.

dare claim to be a DP professional; or indeed that DP is a profession? On the basis of the span and depth of knowledge required.

A CDP must demonstrate knowledge, hopefully gained through competent experience and education, in the full spectrum of DP.

I assert this makes the CDP holder a professional in the full sense of the word.

Dan Remy

Miami, Fla.

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## Letters to the Editor

## No Impact at Roots

In regard to the protracted controversy over the Certificate in Data Processing (CDP), I would like to assert that opinions, pro or con, are based on an erroneous premise.

The options vouchsafed to date never seem to impact at the root of the issue—the real meaning of being a qualified CDP, licensed or not.

On what basis does a person

# THE WORD IS GETTING AROUND.

RAYTHEON DATA SYSTEMS

## Would Certify Equipment

# AT&T Has Role in Plan to Open Telecommunications

By Joe Wright

Special to Computerworld

As I wrote in "Don't Break Up AT&T - Just Break Up Its Monopoly" (CW, Sept. 17), I believe there should be a free market in telecommunications. And I have a proposal for bringing that about:

- The provision of telecommunications services and equipment should be open, without restriction, to anyone with the economic and technological wherewithal to enter the market.

Consequently, all laws that restrict market entry should be repealed. The system of filing tariffs and the network of public utilities commissions should be abolished, with prices being determined fully within the free market.

- Because AT&T has had an exclusive market in these areas and because other suppliers might have come into existence had this exclusivity not existed, AT&T should be required to provide local loop connections to any and all specialized common carriers who agree to meet reasonable technical criteria required to interface with AT&T facilities.

This should be for some specific period of time hence (perhaps five years) to allow this market to open up, after which time the decision to allow interconnection to AT&T facilities would become an exclusive prerogative of AT&T.

- This should also be the case with interconnected telecommunications equipment. For a definite period of time, AT&T should be required to connect any

private equipment that meets reasonable technical criteria.

Any manufacturer of telecommunications equipment should apply to AT&T

## Reader Commentary

for certification of any equipment intended to be connected to AT&T facilities.

Certification is necessary because, unlike passive electrical appliances, telecommunications equipment generates current that can be dangerous and harmful to the network and has a perfect right, as a consequence, to demand that equipment meet criteria of safety and performance.

The phrase "AT&T Approved" would come to mean in telecommunications what "UL Approved" means in electronics.

- Any dispute about the reasonableness of technical interconnection criteria would be settled by an independent team of scientists and engineers to which the disputant and AT&T mutually agree.

- Reasonable fees should be set for equipment certification and the full expense should be borne by the manufacturer and/or the supplier and/or some intended user.

- Certified equipment would be installed without protective coupling arrangements. AT&T would reserve the right to require protective coupling arrangements for all uncertified equipment; the expense of such arrangements would

be borne by the equipment manufacturer and/or supplier and/or user.

Once uncertified equipment becomes certified, the coupling arrangement could be removed, if desired, with the cost of removal borne as above.

- From the outset of decontrol, AT&T would be completely free to offer any service and/or equipment at any price it desired. No punitive actions or new restrictions on AT&T's competitiveness would be allowed.

In the context of worldwide telecommunications, AT&T has many achievements to its credit. Barring it from engaging in competition could destroy the whole system, setting back American telecommunications back for years.

All the other suppliers of equipment and services put together could not step into the huge vacuum that would be left by an AT&T collapse.

- At the end of the set period of unrestricted interconnection, all requirements that AT&T provide connections, certifications, etc. would cease and the decision of whether to continue with these practices would become exclusively AT&T's.

All other common carriers and equipment manufacturers would have the same prerogative with respect to their own systems.

The above elements indicate, in broad outline, a proposal that would create a free market in telecommunications.

I realize that there are many, many details that would have to be worked out, but this is the direction in which we must move if we are going to be assured of having the best telecommunications service.

## Letters to the Editor

### Wrong Question Asked

Miles Benson started off by asking the wrong question - "Which is more important, efficiency or maintainability?" (CW, Sept. 10). He then expanded this question into several smaller ones, each wrong, and finally concluded the article by once again asking the wrong questions. In between he constructed a rather put scenario peopled by Mr. Off-the-Wall and Mr. Goody Two-shoes.

Benson should have asked when one should strive for tight code and when one should strive for more generality. He

should have asked this in relation to the type of application, the type of equipment to be used and the environment, or type of shop, in which things are to take place.

While I'm at it, I'd like to take issue with two other points in the article. You can ask a high-level language man to look into an operating system if he understands what he's doing, and you can ask a "readability" man to solve intricate problems if he has his thinking processes coordinated and organized.

Glen Newkirk

Union City, N.J.

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## In Setting Up Credit Card Operation

# Decisions Made at Design Stage Keep System Humane

By Bertram Tobin

Special to Computerworld  
In the course of setting up automated credit card systems, a number of design points arise which can legitimately be handled in more than one way.

When we at the Chase Manhattan Bank National Association designed the system for our credit card operation in 1972, we made certain decisions which we have since been able to review in actual use for some years.

From this experience, we now believe both that the decisions we made were by and large correct and that the policy assumptions on which we based our decisions were valid.

### Curing Delinquency

First, we reviewed the normal practice with regard to delinquency operations. In the classical method, a customer receiving an automated, standardized letter whenever the review cycle indicates his payments to date are less than the payments due.

We rejected this method of determining when to send out delinquency letters and improved

the technique by deciding to send letters when they are really needed.

Instead of sending out delinquency letters based upon payments due, we instead chose to base this decision upon the payment pattern. We decided to identify what appeared to be acceptable payment patterns and not to send out letters in these cases.

This change meant we would send fewer letters out, since no one who was not theoretically delinquent was considered for delinquent letters.

In particular, the situation where a single payment has been missed but the later payments have been coming in regularly does not receive a delinquency letter under our technique. We believe this omission improves our customer relations as well as reducing costs.

In the case where delinquency letters must be sent, we decided to use the odd/even technique to avoid sending the same standard letter out repeatedly to a delinquent cardholder. We have since found this improves our chances of getting action from the delin-

quent letters.

The problem of how to handle lost cards (which may simply have been misplaced instead of being really lost) also came up for consideration.

Our solution was to take im-

mediate action both to stop

further charges against the number of the lost card number and to continue to provide normal services to the genuine cardholder.

The action taken to achieve this involves the automatic issuing of a new account number, a letter thanking the cardholder for his lost card report and requesting his signature on certain legal formalities and a monitoring to determine which transactions bearing the old number should be intercepted and which should be transferred to the new account.

Another area in which we found we had to choose between different practices came up in designing the address change op-

erations. The question involved whether original bills should be mailed in "Do Not Forward" types of envelopes. The idea was to obtain notices of moves as quickly as possible.

## Professional Practices

In practice, however, this often resulted in the original bill never reaching the customer, who instead just received delinquent letters. We therefore felt the priority of updating of the mailing address rather than delivering the original billing was incorrect. As a result, we decided to have original bills forwarded and use other letters to try to keep mailing addresses up-to-date.

### Consumer Advocate Systems

There are many other features to the system, but above are sufficient to illustrate the system design decisions that we

made. They were based on a deliberate policy we adopted to regard those of us in system design as "consumer advocates."

Computers may not be human, but system designers can prevent them from acting inhumanly. We can avoid computer actions inhibiting our customers directly or indirectly, and this is what we attempted to do throughout the operations.

Our experience is that this philosophy is practical, so currently we see no reason to change it.

Tobin is a vice-president of the Chase Manhattan Bank National Association in New York City and has been active in credit card system design standards at both national and local levels.

The Professional Practices column is coordinated by Alan Taylor and the editorial department of Computerworld. Articles should be sent to the Professional Practices Page, c/o Computerworld, 797 Washington St., Newton, Mass. 02160.

## Letters to the Editor

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### Unreasonable Force

I was appalled at the positive review in the article, "Passage of Abortion Law Credited to Mini Data" [CW, Sept. 17].

This was a classic example of the unreasonable force of a hard-copy computer printout.

It was not even obvious to the reader of the article that the proposed solution would be correct in checking the population growth.

Nevertheless, the article clearly suggested there are individuals in the Agency for International Development and the National Science Foundation who were very effective in imposing their own type of final solution to the human population problem.

What size computer do they plan to use to push euthanasia?

William R. Duchtera  
Poughkeepsie, N.Y.

### Watch Employee Loss

The article, "View From Below Shows Manager Should Leave His Quirks Home" [CW, Sept.

10] really came home with what a manager is all about.

Those managers who read the article and are convinced they are the "Carls" or "Eds" in their shop should reread Category 6 (Loss of Employees).

In most cases, if the score is not "minimal," they had better re-evaluate themselves or, better yet, have their employees do the evaluation.

Bryan Biesanz  
Anchorage, Alaska

### Debugging Help Asked

Computer literature dealing with debugging programs seems to concentrate solely on those situations where the source listing is available to the debugger.

I am in a position where it is necessary to resolve data exceptions and other problems for programs which are maintained at a distant site.

Is there a document for IBM 360 DOS Cobol users which details step-by-step procedures for debugging from only the core dump?

Kenneth L. Morris  
Colorado Springs, Colo.

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# SOFTWARE & SERVICES

## Mix of Vendors Concern Heads of S Users: Info-Dyne

By Don Leavitt  
of the CW staff

MINNEAPOLIS—Thirty-one companies that heavily utilize remote-computing services spend a median \$500,000/year—a mean \$900,000/year—with an average of seven vendors and “one of the problems faced by these companies is control of outside expenditures,” according to a recent study.

But “few vendors are making this con-

trol of expenditures an easy thing to do,” a spokesman for Info-Dyne, Inc., the organization that conducted the study, noted.

Unlike the acquisition of in-house systems which tends to be a major corporate decision, the startup of remote computing through an outside vendor is low-key. It happens often because a vendor sales call because an end user, and not necessarily the DP staff, has a problem.

Not only do various vendors gain entry into a user organization this way, but the same vendor may gain entry at various points within the organization, sometimes without either the vendor or user organization recognizing such a situation is developing.

That was roughly the situation that led to the just-completed study, according to J. Richard Sherman, president of Info-Dyne.

One of the major users saw itself falling into the multivendor, uncontrolled mode of operation and asked Info-Dyne, a consulting house, to evaluate the vendors to determine which would be the best for the user.

### Market Research Effort

To put its clients' concerns in perspective, Info-Dyne in effect fell into a market research effort, analyzing 16 service suppliers as well as the 32 user organizations, which were visited and interviewed in depth according to a structured questionnaire by Info-Dyne personnel.

The top issue for about 75% of the users was the cost and cost effectiveness of the services. Next in importance were the service factors—response, reliability and ease of use.

This area, coupled with vendor support

of remote job entry service, “is a key issue for virtually all users,” the study said.

A large number (42%) of the users key combined service, either with common file or an easy link between RJE and conventional, interactive time-sharing.

“The increasing use and importance of internal data bases and information access means “are most evident to these users,” Sherman concluded.

“Although two of the unique and real values of time-sharing services are the ability to share costs of specialized data bases and networks with multiple users,” he went on, “only four (13% of the users interviewed) key on special data bases and even (23%) on network needs.” In fact, at another point in the study, Info-Dyne reported 50% of the 31 companies' usage is local only.

Application programs and technical support available through the vendors are also key issues for some users, but neither assumes “as high a level of importance as might be expected,” in Info-Dyne's view. This is quite likely attributed to the general size and competence of this set of users, the report added.

In-house DP groups are becoming more involved with selection of the remote-computing vendors for a variety of reasons. Seven of the user sites had excess capacity of their own and were more careful than they might otherwise be about going “outside” for more computing capability.

Compatibility of environments—previously unavailable through the programs used “outside” might ultimately be brought in-house—a very serious concern, however, of only three users contacted. For the vendor portion of its study, Info-Dyne designed a benchmark effort to provide qualitative and quantitative data on a number of key points.

Info-Dyne, Inc. is at Suite 4444 in the IDS Center, 55402.

## 'Super' Covers Reporting Rules For Payroll, Pension, Personnel

TEWKSBURY, Mass.—The Super package from Wang Computer Services is said to combine pension and personnel administration modules and meet federal requirements in those areas with the PHI Payroll II system that handles payroll and income tax calculations at federal, state and local levels.

The result is an integrated system, written in IBM Cobol for IBM-based installations, that meets most of the mandatory reporting requirements that face businesses today, a Wang spokesman said.

Super Pension is designed to meet all the requirements of the Employee Retirement Income Security Act of 1974 (Erisa) and Wang said it will add future changes to guarantee compliance with new regulations as they are enacted.

Erisa compliance reports for government agencies and for fund administrators, on-demand information for individual plan participants and daily operating data, as well as basic management information, are all produced by the Super Pension module, the vendor said.

The Super Personnel module is said to handle skills inventory, benefits, manpower planning, budget analysis and individual employee profile information.

It is designed to meet the current requirements of the Equal Employment Opportunity and the Occupational Safety and Health agencies “as well as all future demands that are anticipated from these agencies,” the Wang spokesman said.

Logic built into Super Personnel also satisfies the diverse “but equally stringent” needs of union and management, he added, noting Personnel works in conjunction with the Payroll module.

Super Payroll—in reality, PHI Payroll II—can be tailored to the user's needs without reprogramming through the use of parameter cards.

As many as 99 earnings/deduction categories are possible and as many as 8,000 characters of personnel and management history can be stored about each employee, the vendor said.

A report generation module supports custom output in addition to the classic documents produced by most full-blown payroll systems, including W-2s, 941s, workmen's compensation accounting reports and, in the Canadian version, UIC Status reports, T44s, T49s, T494s and records of employment.

Prices are available on a lease or purchase basis. Prices range from \$25,000 to \$75,000, depending on the application modules and optional features delivered with each system from Wang at 836 North St., 01876.

## Flexibility Key to 'Nomad' DBMS

NORWALK, Conn.—With the implementation of a data base management system (DBMS) called Nomad on the remote-computing network of National CSS, Inc., subscribers apparently now have some of the advantages of both hierarchically organized and relational data bases.

Under hierarchical schemes, movement through a data base is controlled by “pointer” elements within records that aim the system at the next logical record, whether of a more general or more detailed nature than the current record. With some such systems, users can move in either direction at will.

“Pointers” are one of the keys to a DBMS' ability to reduce data redundancy. As long as a user can get to a piece of data from various points, there is no need to store it more than once, according to this view. But pointers take storage space and time to handle.

A relational approach overcomes the time and space problems of pointers and allows far more flexible use of the data, its advocates contend.

As usual, however, there is a cost for these benefits. In order to identify all the records sought by a user's request, each record must have a consistent identifier field; data redundancy therefore re-

appears to a degree.

Nomad appears to allow the choice of approach to vary from one data file to another so a user may access each as he deems most appropriate. User control for reporting and for data handling—updating and the like—was stressed in the vendor's announcement of the capability.

Nomad is available throughout the National CSS network, a spokesman noted from 300 Westport Ave., 06851.

## IBM Woofing Hard-Goods Dealers

ATLANTA—IBM's General Systems Division has extended its library of Industry Application Programs for first-time users of the System/32 with the recent release of the Hardgoods Distributors Management Accounting Systems (HDMAS).

The latest set of turnkey programs was designed for small businesses in the appliance; electrical and electronics; hardware; plumbing, heating and air conditioning; industrial supply; and paint and chemical industries.

Applications supported by the programs include billing, accounts receivables, sales analysis and inventory control, IBM said. HDMAS may be ordered in two different configurations for each of the six

supported industry areas. The first package, which offers billing, accounts receivable and sales analysis, has an initial cost of \$2,500 and a monthly license fee of \$120.

A second package adds inventory control to the applications covered by the first. This version of HDMAS has an initial cost of \$2,975 and a monthly license fee of \$140.

The lowest priced model of the System/32 rents for \$770/month under a three-year lease; the hardware and software to get a HDMAS user in operation costs less than \$1,000/mo, IBM noted.

First deliveries of the HDMAS software are scheduled to begin this month, the spokesman said.

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**CD** CONTROL DATA  
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# Even Without DBMS, Analysis Clarifies Data's Value

By Ian Palmer

Social to Computerworld

The increasing use of data base technology is leading to new attitudes toward data processing. The emphasis during systems analysis has traditionally been on the "processing," with the data base approach, the emphasis is changing toward the "data" which the application systems are based.

Traditionally, data structures have been designed for particular applications — so-called "application-dedicated files"; the data base approach is centered around the "shared data resource," with data structured independently of individual application requirements.

Data analysis is concerned with organizing an enterprise's data resources. An enterprise can neither plan nor carry out its day-to-day operations without continued use of its data, whether this resource be stored in the computer, in clerical files or in the heads of key personnel.

The data clearly has a value — it is expensive to collect, to maintain and to organize.

## Analysis Objective

The objective of data analysis is to determine the fundamental nature of an enterprise's data resources and to organize and document all relevant facts concerning this data. If handled in a disciplined way, data analysis results in a new understanding of the data resource and in a recognition of ambiguities and inconsistencies in the meaning and use of data. These may be as obvious as two departments using the same term to describe differing types of data, or as complex as consolidated data being incorrect because the corresponding source data has been collected under varying time frames.

Data analysis involves more than merely identifying and defining data elements; it is concerned with validity controls, confidentiality, volumes, coding systems, storage, ownership and, in fact, all aspects of the data itself as opposed to the details of its processing.

## Methodology Needed

Recognizing the need for data analysis is only the beginning; a methodology to assist is needed to ensure the analysis is rigorous and consistent.

Once the area of data to be analyzed has been defined, the first step is to determine the principle entities with which the enterprise is concerned.

In this jargon-infested technology, the term "entity" implies no more than the things (persons, places, events, objects) of interest to the enterprise. The distinction between "entity" and "entity type" must be kept in mind, e.g., between "customer" as an entity type and "XYZ Corp." as an entity.

Each entity type must be capable of precise definition and each entity must be uniquely identifiable — for example, an enterprise may define a customer as a person or organization that it invoices to; each customer may be uniquely identified by his name and address.

The next step is to construct an entity model (the term "corporate data model" is also used) of that part of the enterprise being analyzed. The relationships between entity types are represented in the entity model; in the data base it is the relationships between entities that are represented.

Thus customers may be related to the orders they place, to the salesmen who service them and to their delivery points. Orders are related to the products on the order and the warehouses from which they are supplied.

## Consider Attributes

The properties or descriptive values associated with entities must also be considered during data analysis. These are

termed "attributes."

Among the attributes of customer entities are likely to be name, address, account number, date of last payment, size of customer and credit rating.

The recognition and definition of attributes is not so critical that it need be complete during the early stages of data analysis. On the contrary, data analysis is very much a reiterative process, and it is unlikely a completely satisfactory data model will be obtained on the first iteration.

Interestingly, some of the concepts developed by E. Codd with his relational data base have been found to be of more immediate applicability as part of the data analysis methodology. An entity type is similar to (but less rigorously defined than) what Codd termed a "relation."

Thus Codd's normalization process can be used to examine the attribute types

associated with an entity type to ensure there are no hidden dependencies between attributes which ought to be represented directly in the data model.

For example, if a customer has several accounts, then the date of last payment

## Data Basics

may well be directly related to account number rather than to customer, suggesting an account entity type should be included in the data model.

The concepts of entities, attributes and relationships provide a framework around which a data analysis methodology has been developed and successfully applied by consultants from Caci's London branch. This discipline must include full documentation at each stage, and it is here the data dictionary (which may be

automated or clerical) has been found to be an essential aid.

Eventually the data analysis phase may progress into data base design when the data model is mapped onto the logical structures provided by the data base management system (DBMS).

To make such decisions, some knowledge of the application usage of the potential data base is needed at this stage.

A flexible data base structure, representing the real meaning of the data to the enterprise and independent of the potential applications which may access the data base, will be achieved only if a thorough data analysis is first undertaken. Early data base users found — to their cost — that data bases designed initially to support a specific application were relatively inflexible.

Palmer is manager of the data base and teleprocessing group of the London office of Caci, Inc. International.

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## Programs, JCL Controlled

# Hopkins' DP Staff Lauds The 'Librarian'

BALTIMORE — A teaching hospital differs radically from all other institutions which bear the name "hospital."

At Johns Hopkins, nearly 500 post-doctoral students are educated in more than 70 specialties of clinical medicine ranging from neurosciences to primary care. In cooperation with the Johns Hopkins School of Medicine, the clinics and patient care facilities serve as training sites for 480 medical students.

A variety of patient care services is administered at Johns Hopkins. Almost half a million outpatient visits and over 300,000 days of inpatient care were recorded last year; almost two and one-half million laboratory tests were made.

The hospital provided services for 200,000 X-rays, administered 20,000 blood transfusions and served almost

900,000 drug doses and prescription orders. The staff at Hopkins consists of 1,500 physicians, 1,100 health professionals, 600 nurses and 3,000 nonprofessionals.

To help maintain order at this massive health care and teaching facility, Johns Hopkins' DP division is concerned with records and procedures for patient registration, nursing, laboratory, X-ray, dispensing medicines, consultations, diets, supplies and operating room activities. Its systems handle order entry, collections, billing, medical records and surgical procedures.

The department has a 256K IBM 370/135 and a "three-quarter me" 370/145 which run 24 hours a day, seven days a week.

In addition to programs written in-

house, the staff utilizes a number of packages from outside vendors, covering both application and system support areas. One that falls in the latter category, for example, is The Librarian source program retrieval and maintenance system from Applied Data Research, Inc. (ADR).

### Ensures Stability

"That package not only controls and protects the assets of Johns Hopkins Hospital, but ensures stability and continuity in the day-to-day computer operations and computer production processes," according to William P. Cummins, manager of systems development. Cummins' department has 30 people in project analysis and operations support.

"Programmers used to keep source statements in card trays in their offices,"

it's not all paperwork for William P. Cummins, manager of systems development at Johns Hopkins.

he noted recently. "If a programmer left, there was a potentially chaotic situation because each man had his own method of filing and his own system for keeping control of his work."

### Eliminates Card Files

"Now, source statements are permanently filed on disks and tapes," he said. "This totally eliminates the need for cards and card files. A programmer may have as many as 80 programs and 30,000 cards, and one can imagine the difficulty in maintaining control without Librarian."

"Not only does the package give us a more stable production environment, but it also gives us backup and security for our 1,281 programs."

The ADR software is used for fast update, for storage, for making changes, for storing macros and for changing JCL procedures. Using it, Hopkins has an organized approach to system backup and protection: it stores everything on tapes on one Librarian master file.

### Outpatient System

As one example of its capabilities, "The Librarian tells all about the changes and content of our outpatient systems," according to Wayne D. Blackman, systems analyst of outpatient systems.

"Without it, we'd have to look at each one of our system's 98 programs individually," he noted.

"It's easy to keep and easy to maintain. From the master file index, once the program is in production, we can verify its source," Cummins agreed. "The Librarian helps us audit, verify, backup and protect."

"We suffer some turnover of personnel. With the Librarian, we don't have a turnover problem. You know the source programs are all there. You know they're all OK."

"JCL for DOS also changed, created and stored on the Librarian." Howard Buckholz of operations support noted. "We create a jobstream every day."

"It is extremely flexible to use The Librarian under OS to take DOS JCL. It replaces all card decks — there's no need for card readers and punches."

"We really save hundreds of dollars every month by not having to lease that kind of equipment," he said.

# Getting your data from here to there

A special supplement on  
**Data Communications Network Configurations**  
in the November 26th issue of *Computerworld*.

You can run into a lot of hangups planning and operating a data communications network. Your DP staff — including managers and technical specialists — has to make important decisions on a lot of expensive items like terminals, line speeds, modems and network configurations, to name a few. These networks are usually planned years in advance, and when they are put together, they're built to last. Yet the industry is in a constant state of change, and networks are often being upgraded with faster equipment, newer sites, more efficient lines, etc. So proper planning is essential.

We'll be taking an in-depth look at the changing world of data communications networks in the November 26th issue of *Computerworld*. And we'll give special emphasis to how they should be planned.

Edited by Ron Frank, this supplement will be filled with input from users who understand this environment with all its implications, and you'll get the benefit of their experiences. You'll see stories that evaluate common uses of data communications, like batch versus on-line, private lines versus dial-up lines, all digital versus analog lines, and the use of newly emerging carriers. And you'll see stories that point out ways you can get the least cost on your configurations.

If you're involved with data communications — or if you will be in the future — you should be reading this special supplement in the November 26th issue of *Computerworld*. And if you're marketing data communications products or services, you should advertise them here. But don't miss the November 7th ad closing date. Contact your area *Computerworld* salesmen for complete details. Or call Judy Milford at (617) 965-5800.



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## 'TP2000' Gains Team Interface

AUSTIN, Texas—MRI Systems Corp. has announced several enhancements to TP 2000, a transaction-oriented teleprocessing monitor which operates in IBM OS and VS environments.

To provide support for more potential users, for example, an interface to Team has been added to the previously available Team linkage.

Other features are said to include mapping support for both input and output for non-IBM formatted terminals, such as the Hazeltine 2000, and improved transaction error recovery.

Conversational "scratch-pad" support allowing the programmer to create interactive applications is also part of the update, MRI said.

New macro instructions are included to simplify the definition of the user's telecommunications network, and additional security coding options—user-selectable—are said to protect the data once it

is in the network.

A simplified version of the TP 2000 system code itself and a simplified version of the interface from the user's application code to the system code are other enhancements to the monitor.

TP 2000 can be used in conjunction with MRI's System 2000 data base management system or in stand-alone mode. The monitor itself is said to provide multitask message handling, switching and processing facilities that interleave telecommunications line control, user application code and data management control.

Reentrant coding allows all system service routines to be shared by multiple threads; parallel processing of messages is performed with automatic system resource management.

TP 2000 is available now for \$20,000 from MRI through P.O. Box 9968, 78766.

## PL/I Option Not Good or Hidden

By Domenick Vitulli

Special to Computerworld

In his report on the "Hidden" PL/I Option for providing in-line I/O code [CW, Sept. 10], David A. Souerwine neglected to mention the Total option applies only to users of the OS PL/I optimizing compiler and is not available to DOS users.

He also commented there is "no trade-off involved" when using this optimization option. This is not the case—in line code for an I/O statement using the Total option causes over 300% more compiled code than is normally produced for the I/O operation.

Because the library subroutines that handle I/O are present regardless of

whether Total is specified, this presents an overhead to be considered if program size is critical.

What troubled me most about Souerwine's remarks was the allegation the Total option is hidden from the user and undocumented in the IBM technical support manuals.

After a quick check of these reference sources, one finds in-line I/O code is mentioned in the OS PL/I Optimizing Compiler General Information, Language Reference, and Execution Logic manuals, hidden in chapters with such obscure titles as "Optimization," "Record-Oriented Transmission" and "Efficient Programming."

Let us hope all such "hidden" options are as difficult to find.

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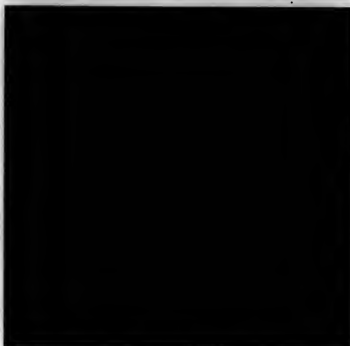
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# DP Dialogue

Notes and observations from IBM which may prove of interest to data processing professionals.



This graphic design depicting the outward progression of squares and triangles symbolizes the continuing evolution of System/370.

## System/370: The Continuing Evolution

In June 1970, IBM announced the System/370. Since then, a wealth of new products have continually extended the versatility and productivity of the system. Thousands of users now have a proven 370 base for their future growth.

Recently, DP Dialogue asked Gale Agular, a key systems marketing executive in the IBM Data Processing Division, to put the System/370 in historical perspective. We asked him:

Now that the 370 is entering the fifth year of product life, can we make any analogy with the 360 five years after its introduction?

"From a hardware standpoint, the 370 is in a similar position to the 360 back in 1968, in that they are now solidly installed. We are now entering that period where users are just beginning to exploit the full potential of the 370's new architectural base. New and improved 370 software systems are being added to this base at an ever increasing rate. This expansion involves far more complex systems in response to the growing need for communications. By that I mean the ability to retain vast amounts of valid business data and to have this data available to all appropriate users within that business for immediate decisions."

What are some of the benefits a user can gain from this new architecture?

"Compatibility is the foundation. Thousands of our customers are now in a position to take advantage of new technologies and subsystems with a minimum impact on their present applications, operations and programming. For instance, these customers

can add new tape drives, new terminals, even new CPUs without losing their already-existing programming investment."

Wasn't this kind of compatibility important to the 360, too?

"It was. But it's fundamental to the 370. We now have a systems base that may support many generations of devices. With this architecture, users can keep pace with technology that appears to be developing faster than ever before in every area of data processing."

Why is it so vital to keep up with the new technology?

"Because the latest technology offers continually higher productivity benefits. This is especially important when you consider that almost two thirds of data processing costs these days are represented by people investment. Our new product announcements are geared to the concept of across-the-board productivity improvements. Virtual storage, an integral part of System/370, is itself the best example. The 3850 mass storage system and the new 3800 printer are also good examples of this."

We've been talking about the System/370 as a base for tomorrow's growth. But what about the day after tomorrow?

"It seems we will see more overlapping of computer systems than in the past. The 360 represented a huge technical leap forward, since it carried over so little from the pre-360 era. But the 370 began an evolutionary trend since it incorporated major portions of 360 technology. This overlapping trend

(Continued on next page)

## Simulating Strategies With a New Interactive Retrieval System

Should the new plant be located in Texas or Maine? How many employees are needed to establish a branch office? How price-sensitive is the demand for chlorine?

Making effective business decisions depends on the ability to use large masses of information quickly and efficiently. A new IBM retrieval and formatting system, the Interactive Query and Report Processor (IQRP) can accomplish this objective with minimum effort. IQRP enables users to communicate directly and rapidly with the data files they need—using either typewriters or display terminals.

At the Chemicals Group of Olin Corporation in Stamford, Conn., for example, the use of IQRP is particularly valuable in the marketing area. William Rosier, vice president for marketing, relates a recent decision: "Several months ago, we experienced an imbalance in demand for chlorine and its co-product, caustic soda, two of our major products. We needed to know the optimum production rate to satisfy these two fluctuating demands and the related inventory capabilities."

"Determining the optimal production tradeoff required a thorough analysis of the twenty industries which buy the two chemicals most heavily. In an effort to predict demand, we created a data base, from our own research information, which is stored in our System/370 Model 145. It indicates, by customer and by industry, how much of each chemical is purchased and what estimated share of that comes from us," explains Rosier.

We also break out the information by geographic area."

That data base is now linked, through 3270 display terminals running under CICS/VS, to IQRP (an IBM installed User Program). By using IQRP's flexible set of English-like commands, members of the marketing department can request the information they need from the available data files. The information can then be organized and displayed by IQRP in whatever form it is desired. If the result of the first

search is not adequate, the request can be modified repeatedly until the most relevant data is selected. Finally, a marketing strategy can be formulated.

IQRP's capabilities include ordering numerical data in ascending or descending order, performing a wide range of arithmetic operations and protecting file security with a password sign-on feature. Hard-copy reports can be obtained by routing the output to a high-speed printer.

"We have no doubt that IQRP will bring our users much closer to their own data," comments Martin Muller, director of information systems. "So far, we have several online data bases, all in the marketing area. These include the breakout of chlorine and caustic soda customers by state; a similar but larger file for sulfuric acid; and another file ranking customers according to the number of employees at each of their plants. In addition, we plan to set up an online credit status file for accounts receivable."

It was extremely important to Olin that its existing file and access methods be made compatible with IQRP with a minimum of time and money. "All we did was set up data description tables and define the fields and terms used to make requests. From then on, the system has worked quite smoothly," says Bill McMorris, manager of systems development.

"The ability to customize our inquiries through IQRP instead of having to wait for a formal weekly or monthly report is extremely useful," notes Alex Budd of the marketing services group.

"In addition to indicating general trends, it helps us pinpoint exceptional cases more readily."

"We expect IQRP to play an increasingly important role in long-range planning by helping us simulate a wide range of marketing situations," adds Budd. "Our sales people see it as an important resource. We want to assign our men to areas that will yield the highest profits per account. We believe IQRP can help us do that."



Tank cars at the Olin plant in Charleston, Tenn., are loaded with chlorine.



Celanese, a major producer of manmade fibers, retrained over 200 employees using computer-based training techniques.

## Teaching New Skills with the Interactive Training System

One of the toughest jobs DP managers face today is education. As new applications are introduced in end-user departments, they must find efficient ways to train all kinds of personnel in an organization to communicate through terminals directly with the computer.

Learning to use terminals as a replacement for manual methods often requires detailed instructions. Now these instructions can be provided, at both central sites and remote locations, through an IBM Program Product called the Interactive Training System.

The Program Product can be used for any kind of training. However, the system is particularly useful in teaching those skills that involve new uses of terminals—for instance, a new online order entry application. People can be taught at times convenient to their work schedules and at their own pace, reducing or eliminating travel and classroom expenses.

The system can also conduct tests and keep records of the student's progress. And any company employee who knows a subject well can become the author of an Interactive Training System course. No programming experience is necessary.

At Celanese Corporation, for example, a new IBM data communications network made it necessary for terminal operators at 45 locations across the country to learn some radically different procedures. In just three weeks, all 200 operators had completed their computer-based courses and were productively employing their new skills.

Other than the Interactive Training System, there was no practical way for us to train so many widely separated people in so short a time," says Harry Venable, corporate director of telecommunications services for Celanese at Charlotte, N.C. "The IBM 3275 terminals used for daily operations also access courses stored on our

System/370 Model 165."

At the Shell Oil Company, twelve Interactive Training System courses used by the Shell Credit Card Center in Tulsa, Oklahoma were written by senior analyst Genevieve Moffat.

"Students are generally helped by the question-and-answer dialogues in the courses themselves," points out Ms. Moffat. "Those who run into difficulty can key in their own questions at their terminals. The questions then appear on my terminal and I enter answers which are transmitted back to the students." Some 300 employees have been trained at 282 terminals linked to a Model 158 at Tulsa.

Still another advantage of the system is the assurance that all students, at all locations, are being taught methods that are both current and uniform.

"Because our procedures change frequently, we found it difficult to keep an up-to-date procedure manual at all of our 16 Shell Chemical sales offices," says E. H. Covington, projects manager in Shell's Information Systems Department in Houston. "Now, with the

Interactive Training System, we revise our courses as soon as changes occur, so they always reflect today's conditions."

With three Model 168s and one Model 158 at Houston, in addition to two System/370s at Tulsa, Information and Computer Services of Shell has responsibility for all of Shell's far-flung data processing operations. Dallas R. Wolf, general manager, sees the Interactive Training System as an important aid in implementing and maintaining online computer systems. He cites the instruction of oil and chemical personnel at 73 Shell locations nationwide.

"One of our major objectives is to give all Shell departments the greatest possible control over the entering, editing and accessing of their own data," he says. "We have found the Interactive Training System to be invaluable in teaching computer-oriented techniques at the same remote terminals employed for business operations."

"Both new and seasoned employees are benefiting from this versatile teaching aid. We will be making increasing use of it."



On-the-job training at the Shell Credit Card Center. Employees take Interactive Training System courses at the same IBM 3277 terminals they use for credit card transactions.

## Union Mutual Accelerates Claims and Benefits Processing

"Now we can entirely bypass time-consuming key punching for data entry and error correction," says George Thomas as he talks of claims and benefits processing for group health and life insurance, as well as Medicare, at the Union Mutual Life Insurance Company in Portland, Maine.

Thomas is director of the company's computer center services. He points out that once a group or Medicare claim or benefit document reaches his division, it is processed that same day. This has been achieved without adding extra staff, even though Medicare transactions have grown by 50

percent and group insurance by 20 percent during the past two years.

The key to this accelerated claims processing speed at Union Mutual is an IBM 3886 optical character reader with the new "video collect" capability. The 3886 reads data from source documents directly to tape, thereby eliminating rekeying—one of the biggest workflow bottlenecks in data entry. What's more, with video collect, distinct characters that the machine cannot read can be displayed for instant correction on a specially equipped 3277 terminal.

Thomas explains that source information is recorded on machine-readable documents, in Union Mutual field offices and at their Portland headquarters, in a combination of handprinted numbers and typed OCR-A font. The 3886 scans these documents and records the information on an IBM 3410 tape unit for later processing on a System/370 Model 145 running under DOS/VSE.

If the 3886 cannot read a hand-printed or typed character, the document is directed through the transport system to a special stacker. Later that day, all rejected documents are run through the 3886 again and displayed on the 3277. The operator corrects unreadable characters by keying the data to tape.

"Before we had the video collect capability," says systems analyst Peter Rutherford, "these corrections had to be key punched, and as a result they couldn't get into that night's processing cycle. This affected about 20 percent of our Medicare documents and some 10 percent of group transactions. Now we can be sure everything gets into the cycle the same day."

With the new method, Union Mutual has eliminated backlogs in both group and Medicare claims and benefits processing. As an example of this improvement in processing time, Thomas says, "Doctors and senior citizens in Maine are now receiving their Medicare checks three days sooner than before."

## System/370...

(Continued from preceding page)

is now even stronger, and any revolutionary new system will be evolutionary from the user's point of view. Undoubtedly, System/370 will play a central role in the continuing evolution of data processing.

"A lot of time and effort has been and will continue to be spent by IBM in developing systems and systems products that will allow our customers to expend their use of data processing with minimum disruptive activity and reprogramming. I believe we must offer our customers the flexibility to choose their optimum systems approach free of the limitation of device support, geographic restrictions and programming talent. While much more complex systems may be a fact of life, those systems must manage that complexity effectively and make it as transparent to the user as possible. Systems to be successful will have to continue to provide service while building the function base for new capability and service to the end user."

DP Dialogue appears regularly in these pages. As its name suggests, we hope DP Dialogue will be a two-way medium for DP professionals. We'd like to hear from you. Just write: Editor, DP Dialogue, IBM Data Processing Division, White Plains, N.Y. 10604.

75-5

**IBM.**  
Data Processing Division

At an IBM 3277 terminal, an operator corrects a handprinted number which was previously rejected as unreadable by a 3886 optical character reader.

## Use of SNA Won't End Non-IBM Options

By Ronald A. Frank

Of the CW staff

SANTA CLARA, Calif. — Independent terminals and data communications subsystems will continue to be available to users when IBM's Systems Network Architecture (SNA) comes into widespread use.

This is the opinion of two data communications specialists at Memorex Corp. who believe the user will have options in both non-IBM hardware and software.

The entire SNA concept is based on a standard interface, and IBM "is vulnerable" whenever there is a common interconnection point, Bill Black, manager of communications product engineering, said.

"But users will have to look at the problem from the standpoint of their need to move data. And it will become a software as well as a hardware problem. The alternatives will be system alternatives rather than replacing individual terminals such as users do in today's networks," Lowell Sando, director of software development, said.

While the general-purpose terminal of today will continue to be available, there may be a new type of data communications equipment specifically designed to operate over certain types of lines and networks, Sando said.

As an example, Memorex is studying the equipment interface on the packet-switching Tymnet network. And while there are no specific plans at the moment, Sando said a terminal tailored to take advantage of a packet-switched service would be a distinct possibility in the future.

As the user develops an increased need for higher speed lines, the carrier's line characteristics become more important to

the capabilities of the terminals that are used on these lines, Sando said.

One of the major problems now facing users planning new data communications networks is the lack of detailed specifications about the SNA environment, Black said.

As a result, users who must get networks into operation decide to go with current network technology hoping to upgrade later as more details become available about SNA.

For these users, it is important that they select non-IBM terminal suppliers who will integrate Synchronous Data Link Control (SDLC) and other features into their equipment when the time comes. And the user should look for guarantees that the independent equipment will get additional capabilities, Black said.

The first SNA-compatible terminals will be available from non-IBM vendors within six to 18 months after IBM announces final specifications, Black predicted. The first compatible devices will be in the interactive low-speed applications.

After that, the more complicated buffered intelligent and batch devices will appear from non-IBM suppliers. And most of these units will fit into SNA networks to replace comparable IBM communications equipment, he said.

The most likely level at which compatible terminal systems will interface is at the terminal control unit, Sando said. It is at this point the user's data actually enters and leaves the network, he said.

Terminals used in these systems will have a common microprocessor as the core, and they will utilize a common line discipline such as SDLC or a similar full-duplex protocol, Sando predicted.

But added to these common features will be specialized capabilities that will

adapt the terminal subsystems to specific environments.

There will be a "lack of migration" to the Network Control Program (NCP)/Virtual Telecommunications Access Method (VTAM) environment, Sando said.

It is not a simple process to convert to VTAM, and many users don't want to get all new terminals to operate under SNA. Inside IBM, VTAM development is slipping for about two years and today there are no announced users of Level 3 VTAM with NCP, Sando said.

Another serious problem for the user is that the 370 is not a good host device for communications, Black said. As presently structured under SNA, the user pays a high cost to have the host interact with the terminal processor.

The host should operate as independently as possible of the network operation, Black said.

Because of these limitations, it is likely IBM will introduce further enhancements for its 370X front ends, probably with more advanced memory technology for faster switching. Or a new front-end family will evolve from IBM before SNA is finalized for the user, the Memorex spokesman said.

An example of the more intelligent front ends needed in future networks is the recently introduced Memorex 1380. It will be compatible with SDLC networks.

Meanwhile, the earlier 1270 terminal controller will continue to be available for more conventional applications.

The 1380 is a "soft front end" and it will offer a VTAM-compatible version of NCP as a later feature, Sando said. The expanded features will be implemented as software so users can upgrade as their networks become more complex, he said.

## Telenet Asks FCC To Regulate Tymnet

WASHINGTON, D.C. — Telenet Communications Corp. has asked the Federal Communications Commission (FCC) to require that Tymshare, Inc. operate as a regulated common carrier.

Both firms currently offer packet-switched service to users, but Telenet operates as a tariffed carrier while Tymshare is nonregulated and provides its service under contracts with its customers [CW, Sept. 24].

In a complaint to the FCC asking that Tymshare be certified as a common carrier, Telenet said the Tymshare service goes beyond the provisions of AT&T's joint-use tariffs.

"The store-and-forward switching conducted by Tymshare's Tymnet for its data communications customers is a separate communications activity which cannot be legitimized" because AT&T allows the facilities to be jointly used by many customers, Telenet said.

"Tymshare is providing interstate and foreign communications service for hire, for profit," Telenet said.

An FCC staff spokesman said Tymshare would have to respond to the Telenet complaint before it can be determined what action will be taken.

The broad question of whether packet-switched services should be regulated or nonregulated is included in an FCC proceeding known as Docket 20097. It is not known when the FCC will reach a final decision on this docket.

Meanwhile, Telenet wants the commission to require that Tymshare operate under tariff as a regulated carrier.

Panorama of the Recent Tele-Communications Association Conference

## The new 30 cps Terminal from AJ

Here's the brand new AJ 830, a 30 cps impact printer terminal that utilizes AJ's microprocessor control and the innovative "days" print wheel. The AJ 830 is ideal for interactive time sharing, information entry and retrieval, and point-to-point data exchange.

Some of the features of this great new terminal include:

- Throughput, high print quality, multiple copies
- Adjustable horizontal and vertical tabs
- 10-key numeric pad
- USACI/EBCD/Correspondence codes
- Plotting and APL

You also can get options such as forms tractors, pin-feed platens, and fan-fold paper shelves. There's even a 45 cps printer available for greater throughput.

There's more, too. AJ's nationwide sales and service organization stands behind every Model 830. And, you get your choice—purchase or lease (month-to-month if you wish).

As you can guess, we're very excited about the AJ 830; you will be too once you get all the details. Just fill in the coupon or give us a call.

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## Low-Cost Unit From Tektronix Has Graphics, Alphanumeric

BEAVERTON, Ore. — Tektronix has introduced a low-priced graphics terminal which it said makes graphics available at a price normally charged for CRT alphanumeric devices.

Called the 4006-1, the terminal combines both graphics and alphanumeric at a basic cost below \$3,000, according to Tektronix.

The 4006-1 is said to be compatible with "most mainframe computers," and

Data received by the terminal can be written or drawn on the display or can control other functions in the terminal. The 4006-1 has two principal operating modes, Alpha (alphanumeric) and Graf (graphic display). Alpha mode permits receipt and display of alphanumeric data on the CRT. Graf mode controls input of data which causes vectors to be written on the display.

In the alpha mode, the 4006-1 will have a 5 by 7 dot matrix, 63 printing characters and 35 lines with at least 74 char./line.

In the Graf mode, it will have 1,024 by 1,024 addressable points, with 780 in the Y dimension viewable on the screen.

The 4006-1 provides continuous lines in the vector mode between any two selected points.



The Tektronix 4006-1 terminal is compatible with the 4631 hard-copy unit.

## Terminal Transactions

it will be supported by the same graphic software available for Tektronix' earlier family of graphic terminals plus an Interactive Graphing Package.

Hard-copy compatibility is included in the 4006-1, using the Tektronix 4631 hard-copy unit. Off-line storage can be provided by the Tektronix 4923 digital cartridge tape recorder.

Data rates up to 4,800 bit/sec are available, with rates selectable in eight steps of 75-, 110-, 150-, 300-, 600-, 1,200-, 2,400- and 4,800 bit/sec. The 4006-1 has 1,024 by 780 viewable points.

Its screen capacity of 2,590 alphanumeric characters provides as much information as most CRTs that are only alphanumeric, the firm said.

The 4006-1 is compatible with EIA RS-232A, -B and -C (CCITT-V24) interfaces. An option for the 4006-1 is the half-duplex data communications module which extends the capability of the standard integral interface to include half-duplex normal and half-duplex with supervisory channel operation.

The 4006-1 allows communications between an operator and a CPU in either alphanumeric or graphic operation.

## Transaction Device

### Available From CCC

BEDFORD, Mass. — Concord Computing Corp. (CCC) has introduced the 750 transaction terminal for financial transactions and check authorization at retail points of sale.

The terminal features an alphabetic and numeric printer capable of printing up to five lines with 31 char./line for recording transaction information on entry documents. It has a 10-key keyboard and nine programmable keys.

The terminal accepts standard magnetic stripe and embossed cards, according to a spokesman. Its microcomputer can be programmed to lead operators through transactions under the direction of a 12-position back-lit display.

The 750 can communicate directly with a CPU at speeds up to 1,200 bit/sec as an Ascii device or operate through a control unit which offers a high-speed binary synchronous communications interface.

The terminal costs \$1,600 with first deliveries scheduled for January from the firm at 7 Alfred Circle, 01730.

# THE NEW SYCOR 440



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SYCOR INC.

# Burroughs TT 602 Designed for Financial Applications

DETROIT—Burroughs Corp. has a transaction control terminal system, the TT 602, for banks and other financial institutions.

The terminal system has been designed for electronic funds transfer systems (EFTS), particularly those based on the use of magnetic credit and cash cards, and also accommodating other identification methods, a spokesman said.

The TT 602 has a keyboard/display module with a 16-position Panaplex display panel, a 12-key numeric keyboard, four basic functions keys plus special application keys and indicator lights.

This module is approximately the size of a desk-model electronic calculator. A separate module, which may be located up to eight feet away, contains the terminal's memory, power supply, logic, data set and data communications processor, Burroughs said.

The terminal may be equipped with

either of two magnetic card-reading devices. The first device reads track two of a magnetic striped card as adopted by the American Bankers Association or track three as specified by the theft industry. The second device reads track three and records new information on the track as a transaction is completed.

An optional, hand-held keyboard allows the card holder to index a personal secret identification number to verify that he is an authorized user of that card.

Each TT 602 contains a microprocessor utilizing large-scale integrated circuitry. The terminals can communicate directly to a central computer or to a local or remote system and communications processor, the vendor said.

The TT 602 can have a 150-digit or 256-digit buffer for receiving data or for storing data prior to transmission. A "paging" key allows the operator to display stored data fields sequentially to

verify or correct data prior to transmission. Similarly, it will display data received by the terminal from the central com-

## Terminal Transactions

puter. The TT 602 guides and controls the terminal operator as data is entered into the terminal, the company said.

### Confidence Test Routine

Another feature of the TT 602 is a self-contained confidence test routine that is activated automatically when the terminal is turned on. This routine quickly checks all the terminal's circuitry and reports the terminal's status on the display panel.

The TT 602 has transmission speeds ranging from 75- to 1,800 bit/sec and operates asynchronously in half-duplex mode. Either internal or external data connections are available.

The network environment can include two-wire dial-up lines, four-wire leased lines with or without dial-up capability or direct connection to a central computer or local system and communications processor.

First deliveries of the TT 602 are scheduled to begin in the second quarter. Purchase prices for the basic system start at \$990.

## Hard Copy Optional On DEC Graphics Unit

MARLBOROUGH, Mass.—An interactive graphics terminal with optional integrated hard-copy output unit is available from Digital Equipment Corp.

The video-display terminal, called the VT55 Decgraphics scope, is designed for compatibility with "any computer processor," the vendor said.

The VT55 is intended for such tasks as plotting histograms, waveform and peak analyses, data display, monitoring and trending. The terminal will also have applications in network-oriented data base systems, the firm said.

Based on the VT55 Decscope, the VT55 provides interactive graphics with up to 1,024 data points, 512 by 256 resolution. Graphic cursors can be used for marking portions of a graph. Horizontal and vertical lines can be displayed for constructing background grids.

Incorporating an ANSI-standard keyboard, the VT55 graphics terminal provides 24 lines of 80 characters, editing cursor and standard serial communications at up to 9,600 bit/sec.

The optional hard-copy unit, at a price of \$800, copies both text and graphic screen contents on electrolytic paper in 25 seconds without the depressure of the auto print key or under control of the host computer, the firm said.

The VT55 costs \$2,495 with first deliveries scheduled for November.

## Communications Adapter

### Enhances Greyhound System

PHOENIX—Greyhound Computer Corp. has introduced the Integrated Communications Adapter (ICA), an enhancement for its 360/30 systems.

The ICA provides the 360 user with a single synchronous communications line which is equivalent to the IBM 2701 with a 7698 Type II synchronous data adapter, an external clock with 2,400- to 9,600 bit/sec, 9600 Ebcidic code and 8029 transparency.

A transparency switch isolates the ICA from the CPU, allowing manufacturer maintenance on the mainframe.

The ICA is available as part of a Greyhound Phoenix 360/30 system. The rental rate is \$250/mo., including minimum monthly maintenance, on a three-year lease, Greyhound said from Greyhound Tower, 85077.

## CONVERSE MEETING

Users of CONVERSE time-sharing communications systems will be organizing a CONVERSE User Group on Nov. 3-4, 1975. If you are interested in exchanging information with other CONVERSE installations please contact:

Clarence Mills  
P.O. Box 1084  
Salt Lake City, Utah 84139  
(801) 536-3472

# Clustered data entry and concurrent processing with shared files...\$677 a month.

## The Sycor 440 System—the newest addition to our family of compatible intelligent terminals.

Our new distributed processing system lets you perform data entry and inquiry/response concurrent with background processing. So you don't need multiple systems to do multiple jobs. At \$677 a month (for four keyboards, communications, cassette, and a five mb disk on a three year lease, with maintenance) you can perform all these functions—plus many more you never thought possible at such a low price.

### Intelligent data entry.

You can save time and money by catching operator errors as they happen, prior to transmission to the central computer site. And reduced errors mean greater operator productivity, lower communication costs and reduced mainframe processing.

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TAL II. To extend the 440's power, use our new data entry language, TAL II. This easy-to-use, high-level language lets you customize data entry programs. Instructions are also provided for arithmetic operations, conditional data entry, range checking, table look-up, equal/compare and a host of other intelligent features.

### Shared file access.

The 440 system lets you share and access files locally, reserving investments in telephone communications and central CPU resources. Data entry made easy. Now

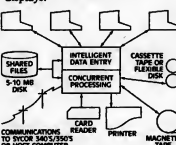
each operator, at her own display, can make use of current data in shared files to support data entry functions. For reduced keystrokes and lower error rates.

**Inquiry/Response.** File look-up is made simple with up-to-date information on-site, using the 440's own file management and disk storage capabilities.

### System modularity.

Design your own system with a variety of options and peripherals.

**Supports from 1 to 8 displays.** Each is controlled by the Sycor processor and is capable of performing tasks independent of other displays.



**Choice of 5 and 10mb disks.** Store and retrieve programs, shared files, and data at remote locations.

**Wide variety of peripherals.** And to complete our system configuration, choose from matrix and line printers, computer-compatible tape drives, card readers, and a variety of communications options.

### Compatibility.

There's full software compatibility with our Model 340 and 350 stand-alone terminals. Keyboards are also compatible.

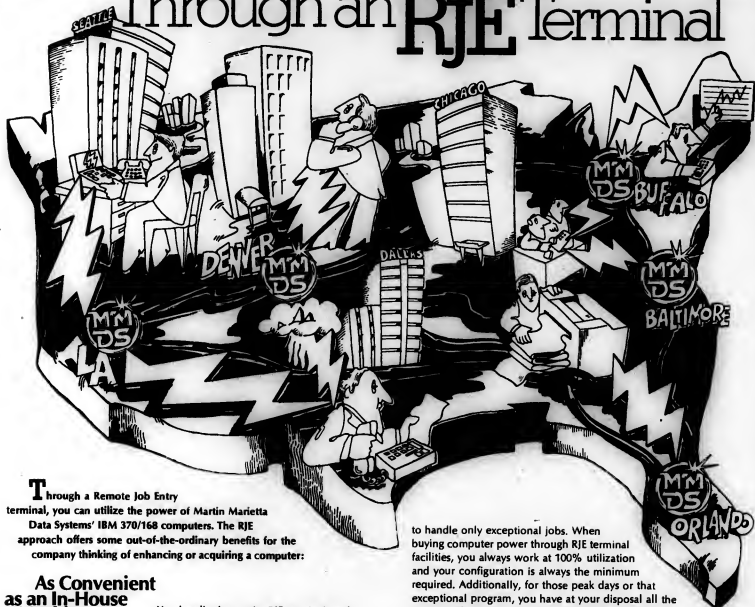
**Programming.** One program fits three different systems—340, 350 and 440.



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# Computing Power Through an RJE Terminal



**T**hrough a Remote Job Entry terminal, you can utilize the power of Martin Marietta Data Systems' IBM 370/168 computers. The RJE approach offers some out-of-the-ordinary benefits for the company thinking of enhancing or acquiring a computer:

## As Convenient as an In-House Machine

You handle the on-site RJE terminal card readers and printers just as you would your own machine. You can use video display keyboards instead, add tapes or use a small IBM computer at the terminal location. You get as much local processing as you want — batch or interactive — with planned overflow back to the MMDS computer centers. The connection is by way of the MMDS terminal, intermixing high and low speed data on high speed duplex lines. The network simplifies the handling of data processing for the decentralized company. The complex of large computers and high speed lines afford economies of scale and reliability.

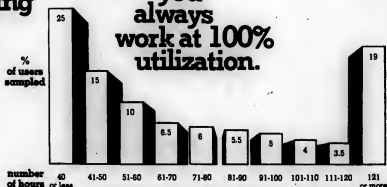
**as much local processing as you want.**

A company's data processing load fluctuates from hour to hour, day to day, and week to week. The average computer, configured for the worst situation, is under half loaded. Not only does the load fluctuate; the configuration requirements change. A hidden source of under-utilization is the capacity (memory size, channels, line handling capability and peripheral devices) that exists

## The Elastic Configuration

to handle only exceptional jobs. When buying computer power through RJE terminal facilities, you always work at 100% utilization and your configuration is always the minimum required. Additionally, for those peak days or that exceptional program, you have at your disposal all the power and equipment you need. A modest in-house configuration handling your consistent volume, coupled with an RJE terminal for exceptional loads and job profiles, is often a happy combination.

**you always work at 100% utilization.**



**main frame meter hours/week**

## Technological Umbrella

For hardware reasons, a company may elect to handle part or all of its load through an RJE arrangement; developing additional systems or implementing its new strategy on the MMDS facility. This is a simple, flexible and economical way to move forward. The same case applies for the technology. MMDS has 50 technical development people working in the VS, STO, IMS, CRJE and communications areas. The software environment they create and enhance is used by our clients, by us and by our parent company.

- It has to be effective and it has to be up-to-date. The use of an RJE terminal

HARDWARE	SOFTWARE
MAIN FRAMES: 370/168+ 360/50 370/145 CDC 6600 370/155 KAI 8400	TWO DBS DBCMP 370/145 OM/ISVT/ISAP DDB DDB/VB
MINIS: 231 4, 3330—single and double density	Executive Assembly COBOL-ASM FORTRAN PL/I RPG SIBOL
Peripherals: Drum, Magnetic Tapes, Plotters, Microfilm	Applications Software Scientific Software

not only smooths load and configuration requirements for the in-house computer owner; it taps into up-to-date hardware, communications and systems software. It is a flexible, fully supported means of developing the company's computing plan without the normal hardware shuffling and software R&D.

## Complete Flexibility Into the Future

You may be doing a lot of batch work now but planning for conversion to real-time processing. Or your loads may be planned to move sharply. Perhaps you're centralizing or decentralizing your data processing arrangements. Owning your equipment may be a costly mistake in implementing your plans and renting equipment is expensive. In any case, continued use of hardware is an unwelcome intrusion on management's time. To get the best price performance from IBM, you need the latest (and largest) equipment, but this may be in conflict with your needs, the economy of purchase ownership and the stability required for internal performance. Utilizing the MMDS computer/network utility gives you options open into the future; avoids cash outlay; gives you the flexibility you need as your situation and needs change; and affords the price performance benefits of large purchased machines and bid steel lined lines.

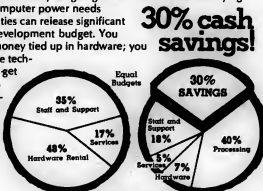
**keeps your options open.**

## Releases Cash for Systems Development

More and more, as some of the excitement falls away from the computer aided business systems area, the data processing executive is fighting for his budget. But now is the time that companies should be putting major effort into systems development: the software environment, the cost of computing equipment and the systems philosophy of interactive computing (with data base organization and distributive processing) are all coming together into a practicable technology for business systems implementation. Many computer set-ups, though, are locked into depreciated hardware and heavy on-going maintenance loads. Satisfying some or all of your computer power needs through terminal facilities can release significant cash for the system development budget. You don't have the same money tied up in hardware; you don't have the software technology R&D load; you get the economy of 100% machine and configuration utilization; and you get the economy of scale inherent in larger, up-to-date machines and faster lines.

Equal Budgets

Category	Equal Budgets	30% cash savings!
Staff and Support	35%	18%
Services	17%	1%
Hardware Rental	48%	48%
Processing	40%	30%



**Example of in-house versus remote job entry computing costs.**

## Free Off-the-Shelf Systems

MMDS has been a pioneer in the field of off-the-shelf Modular Application Systems (MAS) development. Where relevant, MAS can be tailored to fit your exact needs; the systems are straight-forward and efficient to use; and their performance is proven in over 500 implementations. A special feature of the MMDS RIJE terminal service is that these MAS systems are available at no cost for you on the

MMDS computer/workstation facility for use on a client's own computer, the cost works out at 10% to 20% of the estimated cost of in-house development depending on the amount of tailoring. Additionally, the convenience of handling a particular system (say, MAS Inventory Management or an IMS application) on a dedicated RJE facility — alongside the existing in-house machinery and networked database remote subsidiary — is worthy of note. Again, this use of the RJE terminal facility unlocks the economies of utilization and scale as well as hardware flexibility into the future and the benefit of the technological umbrella. MAS, for example, is in use with IMS and other proprietary data management systems with facilities available for interactive processing.

**Martin Marietta Data Systems**

**For more information on our computer power services, MAS ranges, or systems and programming capabilities, please contact:**

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## Graphics Display Unit Aids Tire Design

AKRON, Ohio—An interactive graphics display system enables engineers at the Firestone Tire and Rubber Co. to design tire treads faster than manual methods.

The 900/2250 graphic emulation system from Sanders Associates, Inc. includes two 21-in. display consoles with keyboards and light pens. It allows design engineers to utilize existing IBM 2250 software with the added feature of remote operation miles away from the central IBM 370 mainframe at Firestone's DP center.

Using the keyboards, operators call up a library of available design programs and select one with a light pen.

Tire groove lines are plotted by touching the light pen to the screen at the desired locations. Design lines are generated by the CPU and the process is continued through design of "spines," which are small slots between grooves and tire elements—the protruding rubber of the tread.

The elements, which have varying pitch lengths for noise control, are computed by the sys-

tem and displayed on the screen.

The displays are also used to depict cross sections of the tires. Because tire molds are made for inflated tires, the system simulates inflation under various pressures and depicts the outline on the screen.



Firestone design engineer John Becker measures tread elements on a prototype tire. The treads are designed on a graphics display system.

When the design is complete, the information is transmitted to the mainframe, which then directs a local plotter to print out a hard copy from which a template, or mold, can be designed. Thomas Conner, manager of the Development Computer Operation at Firestone, said the system, in addition to its remote capabilities, enables scaling and translating functions to be performed locally, eliminating host CPU intervention.

"It not only provides greater graphic capabilities and enables us to utilize existing IBM 2250 software, it also provides a steadier image because of the refresh rate," he added.

## ISU Meeting to Cover Data Communications

AMES, Iowa—A data communications conference covering principles and applications is scheduled Oct. 20-30 at Iowa State University (ISU).

Sponsored by the Engineering Extension Service of ISU and the U.S. Independent Telephone Association, the conference will help participants obtain the basic concepts and vocabulary of data communications, a spokesman said.

Sessions will cover effective use of computer-communications interfaces, error detection and correction, voiceband and synchronous data sets, wideband data sets and analog data sets. Laboratory sessions will use low-, medium- and high-speed data sets and peripheral and test gear.

The registration fee is \$700 and additional information may be obtained from Richard Horton, 306C Cooper Hall, ISU, 50011.

## AUSTRALIA

Authentic information is freely available WITHOUT CHARGE from the Australian Embassy in Washington, D.C. (202) 797-3000, and the Australian Consulate General in New York (212) 246-4000, San Francisco (415) 362-6160, Los Angeles (213) 380-4610 and Chicago (312) 329-1740.

Data Dimensions introduces...

# the industry's lowest-priced portable terminal!



**Buy a brand new machine for as little as \$1995. Rent it for as low as \$65 monthly, including maintenance by NCR. Or take a lease/purchase plan. Any way, it's unbeatable!**

Now, you can have it all together—the convenience of a portable...reliability...and down-to-earth prices. In addition, our 265 Portable 30 cps KSR Terminal gives you a choice of standard or new switchable APL/ASCII keyboard.

Whichever model you choose, you get the industry's lowest prices, in a choice of three plans:

1. THE DDI PURCHASE PLAN: outright purchase is now \$2295 for a single unit down to \$1995 for quantity purchases.
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NEW SWITCHABLE KEYBOARD MODELS offer comparable savings. Single unit rentals run from \$130 down to \$90 monthly, including NCR maintenance. Single unit purchase price is \$2495. Quantity discounts are available under both plans.

Lease/purchase plans run from \$125 down to \$70 monthly.

Standard or switchable, DDI 265 is an exceptionally reliable terminal with a quiet thermal printer. Its design dissipates heat so effectively no fan is needed, and it's the only portable with UL approval.

What if you need a terminal other than a portable? You still save with DDI. As one of the nation's largest suppliers of data communications equipment, we seek out the best buys in terminals and modems of all types—and offer you a choice to best serve your needs and budget! Try us.

For more information, write Data Dimensions, Inc., 51 Weaver Street, Greenwich, Conn. 06830. Or better yet, call Bob Lounin at (203) 661-1700.



Data Dimensions, Inc.

## On-Line Authorization Terminals Let Shoppers Charge Groceries

EL SEGUNDO, Calif. — A local supermarket is said to be one of the first to allow the use of Master Charge credit cards for grocery purchases through on-line credit authorization terminals.

Gelson's, which operates five supermarkets in the Los Angeles area, has installed Model 1131 Data Source Corp. credit authorization terminals.

When a Master Charge card is inserted into the terminal, the CPU reportedly responds within seven seconds, giving visual instructions to the clerk. This is said to eliminate customer delay and make it feasible to verify credit for various sizes of purchases.

Gelson's feels this installation may lead to other electronic funds transfer services such as check guarantee, debit card or savings withdrawal.

The Master Charge accounts are handled for Gelson's by First Los Angeles Bank in Century City.

Joseph J. Digance, president of First Los Angeles Bank, said that because of the terminal's speed and control, the bank obtained both an account and the ability to build customer acceptance of electronic fund transfer facilities.

Thomas J. Kempf, executive vice-president of the bank, pointed out Gelson's is the Western States Bankcard Association's (WSBA) first terminal user in the grocery store environment and also the first installation that provides terminals at each check-out location.

WSBA said it has installed nearly 500 Data Source terminals with two Data General Nova minicomputer systems in southern California and the San Francisco Bay area during the past two years. Among the member banks using the terminals are Crocker, Security Pacific, United California and Wells Fargo.

## APL/Ascii Available With Datamedia CRT

PENNSAUKEN, N.J. — Datamedia Corp. has announced the availability of an APL/Ascii switch-selectable version of its Elite 1520A video terminal.

The terminal includes APL overstrike capability and underlining. Backspace through to previous line is standard, and horizontal tabulation operates in eight-character increments.

The terminal operates in a conversational mode and displays 1,920 characters in a 24-line by 80-character format.

Other features include a 128-character set, high resolution display, dual data rates to 9,600 bit/sec RS-232 interface (20mA current loop optional), a printer interface and composite video output.

The Elite 1520A APL/Ascii is priced at \$2,200. Delivery is 60 days from 7300 N. Crescent Blvd., 08110.

## Bunker Ramo Reduces Price Of Model 730 Cash Register

BOSTON — Bunker Ramo has announced a price reduction on its Model 730 electronic cash register.

During the changeover to the Model 740, the Electronic Store Information System (Esis), a typical 10-lane supermarket system, including the recently announced System 3000 data base, will cost \$37,250.

The same system would earlier have been priced at \$51,000, according to a company spokesman. On a per-register basis, the savings amounts to \$1,375.

The lower prices will prevail from now through Dec. 15 on systems ordered for installation before June 30, the firm said.

The current Model 730 is compatible with the Model 740, Bunker Ramo said. The firm is at Nutmeg Drive, 06609.



Gelson's is reportedly the first supermarket that allows shoppers to use credit cards to pay for groceries.

## See What MINI Is Up To

"Up" is precisely the word for what's happening with mini-computers. They have invaded the commercial sector, taking on a substantial part of the data processing responsibility.

It's a trend worth examining. Data Processing Management Association, N.Y. Chapter, will do so, sponsoring two seminars in October and November, with programs provided by Mini-Computer Systems, Inc. Everyone associated with data processing, whether member of DPMA or not, whether directly or indirectly involved, should consider attending.

What the mini is up to is enough to startle you.

\$20 each seminar,  
cocktail hour & dinner  
\$10 each seminar &  
cocktail hour



Thursday, Oct. 23 & Nov. 20, 1975 — 3-5 p.m.  
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Make a check payable to DPMA, New York Chapter, Inc.

## Why Crime Pays Less Than Ever In Lake County, Illinois:

### INCOPTERM



In an inflationary economy, it's nice to see someone holding the line on the wages of sin.

That's what they're doing at the Lake County Sheriff's Office. With a little help from INCOPTERM.

A powerful INCOPTERM 800\* 10/20 intelligent Display terminal serves as controller for 60-odd mobile telephones in local and county police cars covering nearly 500 square miles of northern Illinois.

The officers on the road call in verbal reports and queries; you get immediate responses right in the car. The car's radio then relays such information to the station. No more unauthorized interruptions.

Along with the INCOPTERM 800, the Lake County Sheriff's Office has also installed a powerful INCOPTERM 800\* 10/20 intelligent Display terminal. This terminal serves as a central hub for the entire system, handling all the data and providing a backup for the mobile units.

The INCOPTERM 800\* 10/20 intelligent Display terminal is a truly remarkable piece of equipment. It's the only terminal in the world that can handle 60-odd mobile telephones at the same time. And it's the only terminal that can handle 60-odd mobile telephones at the same time.

The INCOPTERM 800\* 10/20 intelligent Display terminal is a truly remarkable piece of equipment. It's the only terminal in the world that can handle 60-odd mobile telephones at the same time. And it's the only terminal that can handle 60-odd mobile telephones at the same time.

Even if a suspect is seated in the cruiser beside the officer when the return message comes in.

INCOPTERM screens the information in the station house first to permit the encoding of data critical to the officer's safety.

And it does all this while cutting typical transmission times in half. Plus... the built-in INCOPTERM memory less the officer in the car interrupt incoming messages for emergency voice transmission — without missing a word.

## INCOPTERM More Power To Your Terminal

# For a low \$2495, Digital's VT55 Graphics Terminal reaches new heights.

Digital announces the VT55 Graphics Terminal. For use with anyone's computer. To handle a variety of applications more productively through the addition of graphics capability. With optional hard copy output. At a unit price as low as \$2495.

Use the VT55 for plotting histograms, waveform and peak analyses, data acquisition, monitoring, trending, simulation, laboratory charts and forms, or wherever your applications can be improved through graphics.

Automatic, upward line scrolling enables continuous data entry. Graphic cursors facilitate data editing and graph generation, with x-y plotting (2 values of y for each x) of two 512-point graphs.

Hard copy for either text or graphics display can be generated by an electrolytic copier that can be

integrated in the terminal.

A full keyboard offers the complete ASCII character set displayable in as many as 24, 80-character lines.

Terminal-to-computer communications speeds are variable up to a fast 960 characters per second.

The \$2495 graphics terminal from Digital. A new high for video display capability at a new low for graphics cost.

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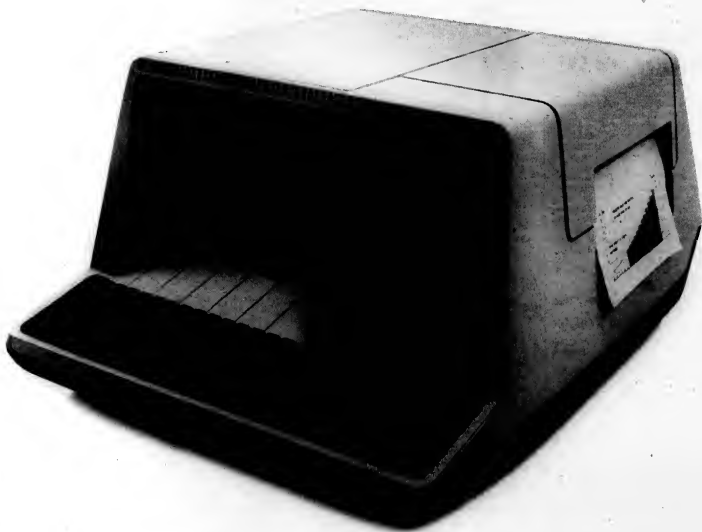
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# SYSTEMS & PERIPHERALS

## But Can Software Keep Up?

## Hardware Progress Opening Door to New DP Concepts

By Patrick Ward

Of the CW staff

WASHINGTON, D.C. - Recent innovations in hardware - semiconductor memory, standardized circuits and large, fast mass storage - may bring hierarchical computer networks and integrated data management systems out of the research labs and into commercial DP within the next decade.

But it remains for the software developer to utilize the potential of these hardware developments, Patrick J. Martin, special assistant to the secretary of administration in the U.S. Department of Agriculture, told a recent conference here.

The growing use of semiconductor memory, standard computer circuits and large, low-speed on-line storage as well as the increases in disk capacity are continuing trends that have been evident in the industry for years, Martin said.

The cost to execute instructions and the cost and access time of data storage have been continuously falling, he added.

As mass storage, bubble memory and charge-coupled devices find their way into the marketplace, they will reinforce this trend, he said, predicting the next 10 years will see the cost of computation and storage fall while speeds and capacities increase.

### 'Building Boxes'

Because the costs of circuit design will continue to be high, manufacturers will be forced to use standard components. Standard hardware "building" boxes will appear that will be able to function as control arithmetic, I/O or communications processors - depending on the microcoded stored logic.

Thus a computer system could be assembled from these blocks, with as many arithmetic processors or I/O or com-

munications processors as the user deemed appropriate.

"A system would grow by simply renting additional boxes and installing the appropriate microcode," Martin said.

The same boxes could go into intelligent terminals or satellite computers. Low-cost computation may no longer be a function of the economy of scale, and the need for centralized computer sites may come under attack, Martin said.

One interpretation, then, is that computer power may become as widely distributed as typewriters and the need for computer centers will vanish, he said. But there are reasons to take another view, Martin said.

Large storage capability is one: "By 1985, the potential to access trillions of words of data will exist. Thus the concept of integrated management information systems will in fact be achievable," he said.

Central sites could also revert to parallel processing using one building block procedure - a type of local processing.

"A processor could, for example, be dedicated to an inventory control or market research application which is constantly monitoring a data base," he said.

"Finally, reliability may dictate keeping the processors in a few centers. If a critical box fails, another can perform its tasks by changing its microcode."

The hierarchical computer network is a third alternative between decentralization and centralization, Martin said. In this approach, large central data centers would tie into the computers in small regional centers. District centers would be linked with the regional centers and office processors would communicate with the district centers.

Hierarchical networks would give the user "the flexibility for centralized data bases, distributed data bases and both centralized and distributed processing," Martin observed.

"How well we can exploit these technological advances rests with the software developers," he added.

Hardware developments will necessarily affect software design, Martin said. Data base management systems will require an operating system of their own under the new hardware technology, he predicted.

Such a data management supervisor "would schedule requests to the data base and communicate with data management supervisors on other machines to either initiate or respond to information requests," he said.

Because of the hierarchical storage philosophy of these systems, "the programming languages in the next 10 years will be file-independent," Martin said.

"While Cobol, PL/I and other procedure-oriented languages will still exist, more nonprocedural, higher level, user-oriented languages will appear," he said.

Although many current operating system functions will be done in hardware in the future, "scheduling will still be a major concern of the operating system," he forecast.

By Toni Wiseman  
Of the CW staff

BOSTON - Systems and applications growth are what should lead to hardware changes. Switching for the sake of technology alone is expensive and foolish.

This is the advice Don MacKinnon, DP director for Star Market Co., gave attendees at a session on "cost-effective hardware selection" at a recent conference here.

"Better planning will help us make better decisions. This sounds very simple but good planning is not easy to do," he said.

"DP has historically been a reactionary field. Someone wants something done and we work on it. We sign six-year leases without knowing what's down the road in the next six months, let alone six years," MacKinnon said.

DP should have its own long-range game plan, he said. This plan should be in concert with the company's overall plans and should have management support behind it.

### Planning Tools

MacKinnon outlined some of the tools he uses to help plan application and hardware changes, working from the premise that "the DP manager cannot plan in a vacuum."

A steering committee ought to be formed, he said. The frequency of the meetings is not important, but the help and input from the users and management are.

"All project requests must be in writing," MacKinnon said. This is a way to provide good backup and documentation as to where the efforts of the DP staff have gone.

"You can go back and see what percentage of systems and programming time is spent on maintenance and on what system," he noted.

MacKinnon also suggested the use of a graph to determine at a glance CPU load usage. A one-page graph allows the DP manager to see the last two or three years, to spot trends and to project future growth, he said.

Another form of this information can be useful in projecting changes in shift coverage or hardware upgrades, he said. "You simply take your existing use, usage of CPU hours, apply a factor for growth and shot in your projected figures for new applications," MacKinnon said.

"This allows you to see where you are heading. You are now planning for change rather than reacting to it," he said.

### Financing Alternatives

What are the financing alternatives in acquiring hardware?

Equipment can be rented from the vendor and paid for on a month-to-month basis. The major advantage of this method is flexibility, MacKinnon said.

There is also no capital investment, and rented machines are usually covered by a full maintenance agreement.

On the other hand, the user ends up paying a higher price, he said, and, since renting is a month-to-month proposition, there is no protection from price increases by the vendor.

"An alternative to renting hardware is to enter into a lease agreement," he said.

## DEC Unveils Two Systems for Interactive Design

MARLBOROUGH, Mass. - Digital Equipment Corp. has announced a family of computer systems for interactive design engineering and production.

Called Designation systems, the units are built around the recently announced XVM medium-cost and large-scale Designation-1080 CPUs.



The Designation System 3000, which incorporates Digital Equipment Corp.'s medium-cost XVM computer, is said to be a totally integrated system for interactive solutions to complex design problems. Another system, the Designation System 1080, is built around DEC's large-scale Designation 10.

"There are literally hundreds if not thousands of wheeling and dealing and brokers who will wheel and deal to tailor a system to the customer."

"The whole crux of leasing is that, since the customer is committing himself for a period of time, he will get a reduction in the regular monthly rental. The longer the commitment, the greater the savings," he said.

The company also has the option of buying, of course, he said.

"The message is quite clear. If you want protection from product obsolescence, don't purchase."

"On the other hand, if the hardware will handle your requirements for the next five to seven years, buying may be the right decision, providing your company considers the capital investment a good one," MacKinnon concluded.

Two basic Decdesign configurations are available: the Decdesign 3000, a unit incorporating the XVM computer at a stand-alone system, and the Decdesign 1080, which employs both the XVM and Decsystem-10.

The systems are intended for use in interactive design problems of a complex nature such as printed circuit design, architectural design, facilities planning, cartography, mesh and stress analysis, factory layout, and planning and graphically oriented, user-developed applications, DEC said.

### Up to Four Workstations

DEC expects the Decdesign 3000 to be configured normally with two interactive graphics workstations, but noted it is available with from one to four workstations.

Each workstation includes a CRT, graphics processor, light pen and writing tablet. The system incorporates two general-purpose processors, disk-storage, a keyboard printer, an electrostatic printer/plotter and 9-track magnetic tape.

Software for the unit includes the XVM/RMS operating system and application aids. The stand-alone system, the Decdesign 3000 can be tied to larger computers through communications interfaces, DEC said.

The Decdesign 1080 incorporates two XVM graphics systems as satellites to a large-scale Decsystem-1080. Each satellite is a dual-processor system equivalent to that found in the Decdesign 3000, the vendor said.

Priced from about \$4,000/mo for a five-year lease purchase of a typical Decdesign 3000 and from about \$30,000/mo for a typical Decdesign 1080, the systems are scheduled for 90- and 150-day deliveries respectively.

## Xerox Reprints 1200

EL SUGUNDO, Calif. - Xerox Corp. has announced three new pricing schedules for the 1200 computer printing system.

They replace a single lease price plan in effect since the 1200 was introduced in May 1973.

The new prices will result in a savings for most customers, depending on volume terms, Xerox said.

The lease prices were effective for new orders on Oct. 1. Current 1200 system customers have until Nov. 1 to choose from the new schedule.

Xerox is at 701 S. Aviation Blvd., 90245.

# BASF Data Module Why wait?



Now you can get the 3348, or "Winchester," Data Module, with all the quality and error-free performance that the name BASF implies . . . and at a competitive price.

The "Winchester" Data Module is a completely self-contained unit, incorporating heads, spindle, and recording surfaces in a protective factory-sealed pack. You've heard of the advantages of this new technology . . . complete security from environmental contamination, improved high-density storage, and incredibly fast access. Now you can enjoy this premium performance without paying a premium price.

Here are the facts, in brief: • Complete compatibility with 3340 drives • BASF-guaranteed Zero-Error performance • Now available in two configurations . . . The 1335 Module, with 35 million-byte capacity, and the 1370 Module, with 70 million-byte capacity • Our 1370F Module, with fixed head and quicker access, will be available later.

For complete details on the BASF "Winchester" Data Module, write: BASF Systems, Crosby Drive, Bedford, MA 01730, or call our nearest regional office . . . in **Los Angeles**, (213) 451-8781; in **Chicago**, (312) 343-6618; and **Clifton, N.J.** (201) 473-8424.

**You're already paying for BASF quality..you might as well have it.**



## For Frozen Food Firm

# System Gets Right Product to Right Place on Time

BUFFALO, N.Y. — A frozen food firm here is leaning heavily on a newly installed computer system to achieve its objective of having the right product at the right place at the right time.

Rich Products Corp. is depending on the system to play a major role in all phases of the firm's operations, William E. Meyers, vice-president of management services, said.

Forecasting sales trends and optimizing distribution will be two of the key applications for the Univac 90/60 system so Rich Products can better serve its 125 brokers, 4,000 customers and field sales force in the U.S. and Canada.

The company's revenues for the current fiscal year are expected to top the \$100 million mark. This represents a 100% growth in six years.

To keep up with this pace of growth in a competitive industry, the company has been engaged in a vigorous acquisition program, adding new facilities and capabilities to its existing base.

Rich Products experience in data processing dates back to 1962 when the company installed its first computer, an IBM 1401. In 1967 this system was upgraded to two IBM 360/30 computers.

### Growth Leads to Purchase

The demands of continuous growth necessitated the purchase this year of the more powerful 90/60 system.

"We were just running out of steam with our existing computers," Meyers explained.

"Our business was growing so fast our DP resources were falling further and further behind our needs."

"With our new system we've got the raw horsepower to do the things we've had in the embryonic stage for some time," he said.

"We can now utilize multiprocessing and data communication capabilities to give our brokers a better reporting service; improve our production, inventory and distribution control; and, in general, obtain a much better handle on our day-to-day operations to the overall benefit of our customers."

Installed in April, the system has a 256K-byte main memory, four Univac 16 tape drives, two 8430 disk units with a total storage capacity of 200M bytes, a high-speed printer and a card punch.

Customer and product data is kept on the disk drives and historical sales data on magnetic tape.

The 90/60 runs under Univac's VS-9 operating system. Programs previously run on the IBM 360/30 systems have been gradually converted to run on the 90/60 without disrupting the company's normal day-to-day computer operations. To date, programs converted encompass accounts receivable, order entry, raw material inventory, payroll and a comparative sales analysis.

### Distribution Assistance

Guy A. Martz, corporate director of distribution, looks forward to the computer providing considerable assistance in coping with distribution problems.

"Transportation and storage are major cost factors for us to cope with and any help we can get from the computer in these areas is a real plus in making our operations more efficient."

The continuous requirement for refrigeration keeps transportation costs high because of the constant need to ship in "reefer" trailers, Martz explained. Since the advent of the energy crisis, fuel costs had increased sizably, he said.

"All of this means we've got to be a lot smarter in routing our own 41 tractor-trailers and those we use from common carriers."

Refrigerated warehouse space costs

about five times more than regular warehouse space and is sometimes difficult to obtain, Martz said.

"As a result, we have to do very careful planning on where to produce and store the 600 different items in our lines to give our brokers and customers the best possible service, yet at the same time keep our inventory levels down to a minimum," he said.

To solve these problems, work is already advanced on two forecasting and truck scheduling applications.

### Forecasting Program

The forecasting program (now being performed manually for some products) will be a highly refined and sophisticated system to provide many of the answers in deciding where to make and store prod-

ucts most economically and efficiently.

A model will be developed every month to produce a sales marketing plan for all products at the broker's level.

Projected to anticipate sales three months in advance, the forecast can be obtained nationally, regionally or for a particular market area.

The second program, known as Route Organization and Optimization (Root), will schedule vehicles on a weekly basis from one depot to several receiving stations in an optimal fashion.

The order entry function is a part of the Rich order and distribution system (Roads). In the near future, the approximately 250 orders received daily at Buffalo, which are presently keypunched on cards and then entered into Roads, will enter into the system more expeditiously

on a real-time basis by using visual display terminals.

Billing now being done on an average of four to five days after shipment of the order will be performed on the same or the next day.

As to the future, "We're looking at a number of plans including extensive use of data communications to link all of our production facilities," Meyers said.

"Beyond that, we're studying Univac's Unit, DMS/90 and JMS/90."

"By some combination of these packages, we plan to revolutionize our entire production, inventory control and distribution network to pull together all of these functions and to provide information of real value to management in charting our short-range and long-range goals," he concluded.

## COM perspectives from Kodak:

# Understanding the economic impact of a Kodak COM installation.

The most cost-effective approach to COM is a lot easier to find now because of a Kodak service called PRINTCOM. It lets Kodak actually premeasure the savings you can expect using your own cost figures when you put a Kodak KOM-80 microfilm to work in your EDP environment.



The PRINTCOM terminal

During PRINTCOM analysis, we input as many as 300 of your cost variables into a PRINTCOM terminal and get back a detailed financial analysis of your immediate savings and of your long-term savings potential.

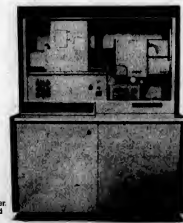
You will find this information invaluable, particularly in light of the emphasis being placed on return on investment.

Beyond PRINTCOM, Kodak is putting a great deal of effort into COM research. Some of this effort and investment has already paid off in technological improvements and versatile software pro-

grams Kodak can provide to its users.

A case in point is our new INFO-LINK I software package. It does away with the need for new application programs each time a microfiche job goes 'live'. It's just one more way Kodak can help you maximize your savings in the EDP environment.

The closer you are to COM, the sooner you should check with us. For an informative view of microfilm and the computer, write today. Eastman Kodak Company, Business Systems Markets Division, Dept. DP5844, Rochester, N.Y. 14650.



Kodak KOM-80 microfilm for top throughput speed with high reliability.

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Graceful degradation	x	x	x		x	
Out of Bounds		x		x		x
Space Saving				x		x
Power & Cooling Savings	x	x	x	x		x
Leased memory for any purchased CPU's	x		x		x	

Control Data — the leading independent. It's been around a long time — and it'll be around for a long time to come. For further information, call your local CDC sales office, or CDC Hotline Collect (812) 853-7600, or send coupon.

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**CONTROL DATA  
CORPORATION**

## COM Allows Auto Parts Dealers To Answer Queries in Minutes

PORTLAND, Ore. — The Volkswagen (VW) owner who walks into a dealership office here usually expects it will take days to locate the parts he needs to put his car back on the road.

However, within two or three minutes, the parts clerk has looked into his own inventory, the regional distributor and Volkswagen of America's master depot in Washington, D.C., for hard-to-get items. In two more minutes, he has made a call to regional VW distributor, Riviera Motors, Inc., here. The order will be filled and shipped that day to the driver.

The explanation for the faster-than-expected service lies with the use of computer output microfilm (COM).

In this case, Riviera sends its inventory data on computer tapes to U.S. Datacorp, which outputs the data onto 7 in. by 9 1/2 in. microfilm cards. These cards are updated every Saturday and sent out to the dealers.

By each Monday morning, 100 VW, Porsche and Audi dealers in Oregon, Washington, Idaho, Montana and Alaska know as much about the total inventory

picture on VW, Porsche and Audi parts as Rivera's top warehouse people.

Each microfiche card contains all the information normally found in about 500 pages of ordinary computer printout, according to Dieter Zunk, Riviera's field operations manager.

"Before we put this system into operation, all our dealers had were parts catalogues from Volkswagen of America and nothing about our inventory here at the distributorship," he said.

"Everything is easier and faster to locate," Russ Taylor, parts manager for Gilbert & Seibel Volkswagen in Vancouver, Washington, said. "Once you get used to looking at a microfiche reader's screen, rather than thumbing through manuals, it's a breeze."

"I can look items up nearly three times



One of these six-inch-long, gold-finished plaster paper weights is yours for \$5.95 from Brian Productions, Mid City P.O. Box 101, Dayton, Ohio 45402.

faster and know for sure if the part is at Riviera. It helps when you have an anxious customer standing at the counter," Midway Volkswagen Parts and Service Manager Don Reader said.

## Three Phoenix Has Floppy Disk Tester

PHOENIX — The Testette Model 33 FD floppy disk tester checks for modulation, missing pulse and extra pulse with a throughput of 1-, 1.6- or 3.2 minutes, depending on the degree of surface testing desired and whether track overlap testing is required or not, according to its maker, Three Phoenix Co.

### Analog Clipping Levels

Tests are made at singular, adjustable analog clipping levels and performed over 234 tracks. In the production test mode, when an error is encountered, the certifier will abort the test automatically, return the carriage to home and indicate on the front panel the type of error detected.

The device can also be used for diagnostic testing under manual control.

The unit sells for \$18,500 from the firm at 10632 N. 21st Ave., 85029.

## Ansi Standardizes Microfilm Cartridge

WASHINGTON, D.C. — The American National Standard Institute (Ansi) has approved American National Standard "Dimensions and Operational Constraints for Single Core Cartridge for 16mm Processed Microfilm," according to the National Micrographics Association (NMA). The standard cartridge is expected to be used universally in all newly manufactured microfilm readers and reader/printers, regardless of the manufacturer, NMA said.

The standard was described as a major breakthrough for cartridge users who presently must carefully choose the proper cartridge so it fits into the corresponding machine.

The standard also established a uniform design for the winding of processed microfilm on the reel and for the physical properties of the lead end of the film. Requirements for the reel are also specified: they include configuration, trailing end of film, leading end of film, separate leaders, optical compatibility, materials, reel capacity and permanent markings.

This standard is available from the NMA (NMA MS1-5-1975). Members should send \$3.00, nonmembers \$4.00 to the NMA, Publication Sales, 8728 Coleville Road, Silver Spring, Md 20910.

## Magnetic Tape Added To Model in GSP Line

MIAMI — Datatype Corp. has added a system with a magnetic tape capability to its GSP line of optical character recognition (OCR) systems.

Called the GSM-40, the system consists of the scanner, a full-screen editing terminal and a magnetic tape recorder.

The input copy for the GSM-40 is prepared on standard IBM Selectric typewriters using any of the several typing elements available from IBM and Datatype. The output can be 7- or 9-track, 556- or 800 bit/in. magnetic tape.

The system's normal throughput speed will process the production of up to 20 typists without creating a bottleneck, Datatype said.

The GSM-40 costs \$22,400 from the firm at 1050 N.W. 163rd Drive, 33169.

### Correction

Southern Systems, Inc. is located at 1011 S.E. 7th Ave., Pompano Beach, Fla. 33060.

When your computer speaks,  
Bell & Howell's COM understands.



# Just in time for this fall.

## Announcing the EDP Seminar Series Fall Schedule

The world of EDP is caught up in a continuous revolution. It's only 24 years since the first business computer made its appearance, and we've gone from tubes, batch processing and single-site giants to multiprogramming, time sharing, data communications, giant minicomputers and hundreds of other technological innovations that were unheard of only recently. Keeping up with this revolution is difficult, to say the least. And that's why we've created the EDP Seminar Series. The EDP Seminar Series gives you practical applications of the newest advances in computer management. What you learn will save you time and money, because each course is geared to practical dollars and sense application.

Remember, these are seminars, not lectures, and you'll be learning by doing in a shirt-sleeve atmosphere. Workshops are an important feature of the Seminars, and round table discussions and shop talk luncheons complement the seminar presentations. The workbooks and course materials are yours to keep, so you'll always have a handy reference to all you've learned. We've selected leading experts from around the country to guide each of our Seminars. They are highly accomplished specialists in their fields, experienced in presenting their techniques to industry and management. If you're involved in one of the areas shown, you should attend the EDP Seminar Series this fall. What you learn will benefit your company, your installation, and you.

### Performance Evaluation and Improvement

Saul Stimler, author of *Data Processing Systems: Their performance, evaluation, measurement, and improvement* will lead this two-day seminar on measurement techniques designed to save your installation money. As well as system performance at your own installation, topics covered include: Criteria for quantifying performance, pencil and paper analysis of a system, Benchmarking techniques, Realtime, Batch and interactive time sharing systems. Cost for the seminar, including continental breakfasts and luncheons and all course materials is \$250.

Wash., D.C.	Marriott at Wash. Int'l.	
	Airport	Oct. 20-21
Chicago	Hyatt Regency	
	O'Hare	Oct. 27-28
San Francisco	Dunfey's	
	Royal Coach	Jan. 19-20

### How to Increase Programming Productivity

John W. Brackett, PhD, Vice President of SofTech, Inc., will lead this two-day seminar for technical managers on the state of the art of Software Engineering. Under his direction you will learn how to: create more precise and visible analysis and design; reduce integration problems; improve software reliability; incorporate visible outputs into the software development cycle; increase programmer productivity; and improve programming management methods. Topics covered include: Structured programming; Top-down analysis, design, implementation; and Chief Programmer teams. Cost for the entire seminar, including continental breakfasts, luncheons, and all course materials is \$300. Additional registrants from the same company are charged only \$250.

New York	St. Moritz	Oct. 6-7
San Francisco	Berkley	
	Marriott	Nov. 10-11

### Data Base Design

Given in association with Leo J. Cohen and Performance Development Corporation, this three-day seminar is a package-independent examination of the techniques required for the design of effective data base systems. The seminar covers Effective Record Design, Physical Storage Techniques, Optimum File Organization/Indexing Techniques, File Integration, and much more. Cost for the seminar, including course materials, continental breakfasts and luncheons is \$300. Additional registrants from the same company qualify for a reduced rate of \$300.

Denver	Denver Hilton	Dec. 1-3
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### Legal Tools for Computer Contracting and Protection

Under the instruction of Roy N. Freed, a nationally known lawyer, author and educator in the field of computer law, you'll learn how to increase your advantage in dealing with vendors that supply your installation. As well as practical discussion and review of your own contracts, subject areas covered in this 2 1/2-day seminar include: Negotiations, Contracts, Warranties, Avoidance and resolution of disputes, Security, Fraud, Taxation, and Techniques for handling any transaction. Cost for the entire seminar, including continental breakfasts, luncheons and all course materials is \$325. Additional registrants from the same company are charged only \$275.

New York	Savoy Hotel	Oct. 22-24
San Francisco	Hyatt Regency	
	San Francisco	Nov. 12-14
Chicago	Hyatt Regency	
	O'Hare	Nov. 19-21

### Data Communications Course #1010 - Practical Data Communications Systems & Concepts

Dr. Dixon Doll, the nationally recognized teleprocessing consultant will lead this two-day seminar on the newest advances in data communications. The course covers areas like SDC, HD-LD, DDS, newly approved major networks to WATS, and the impact of Satellite Carriers.

Total Cost, including workbook, reference materials luncheons and continental breakfasts is \$350. Additional registrants from the same company qualify for the reduced rate of \$300.

New York	St. Moritz	Oct. 13-14
San Francisco	Dunfey's	
	Royal Coach	Oct. 26-31
Dallas	Hilton Inn	Nov. 10-11
Miami	Marriott	
	Miami Beach	Nov. 17-18

### Data Communications Course #1020 - Advanced Teleprocessing Systems & Design

Also led by Dr. Dixon Doll, this course is a follow-up to course #1010. Special emphasis is given to techniques that minimize operating costs in commercial data communications networks. This three-day seminar covers procedures, approaches, and algorithms for evaluating and cost-optimizing network operations. Total cost, including an extensive set of customized course materials, is \$450. Additional registrants from the same company qualify for a reduced rate of \$400.

Miami	Holiday Inn	
	Airport Lakes	Dec. 1-3

### How to Draft Effective Legal Agreements

This one-day seminar is a complete workshop for non-legal, technical people who may be called upon to draft legal agreements for their company. Also led by Roy Freed, this seminar covers a variety of formal agreements, their structure and the legal factors involved. You'll have all the basic skills necessary to write legal agreements, and you'll be able to spot items that really require the attention of lawyers. Cost for the seminar, including luncheon and a complete workbook on the subject, is \$135.

New York	St. Moritz	Oct. 8
Boston	Sharon	Oct. 15



To: Ed Bride, Vice President, Editorial Services, The Conference Company, a division of Computerworld, Inc., 797 Washington Street, Newton, Mass. 02160

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NOTE: If time is short, you may reserve space at any seminar by calling collect. Call Miriam Ober at (617) 968-5800.

## Mini Bits

### CFI Gets IBM Nod to Sell Memory for S/3 Model 15

ANAHEIM, Calif. — CFI Memories, Inc. has received IBM approval for the sale of its add-on semiconductor memory for the System/3 Model 15.

The CFI memory is available for delivery within 30 days from receipt of order and is priced at levels 20% to 30% lower than standard IBM pricing, the firm claimed.

The memory consists of a primary circuit board measuring 12-3/8 in. by 9-1/4 in., which contains control circuitry and sockets into which memory modules are plugged for expansion. The main board plugs directly into the IBM central processor.

"Our add-on memory permits Model 15 users to expand their systems in normal IBM increments, from 48K to 128K on Models A and B and from 160K to 256K on Model C," according to Robert M. Miller, CFI vice-president.

The firm is at 305 Crescent Way, 92801.

### 3M Drives Offered for OEMs

WALLINGFORD, Conn. — Northeast Services, Inc. has announced a full line of 3M cartridge drives for OEM applications.

The TCD300 cartridge drive is offered in small quantities for \$255.00. Tape speed is controlled by a "synthesized tachometer" system not only during read/write operations, but during start/stop as well.

This assures accurate interblock gap lengths and tape positioning required for search or edit operations, according to the firm.

Data may be written at 1,600 bit/phase-encoded at 30 in./sec. The TCD300 uses a 1-, 2- or 4-track dual gap read-after-write head.

Further expanding the TCD300 tape cartridge drive is an RS-232 tape cartridge transceiver. Used as a magnetic tape peripheral, it has the ability to capture, edit, search, receive and transmit data with full error-checking features.

With a single quantity price of \$1,980, this unit can be used as a paper tape replacement or a high-speed, 960 char./sec program loader.

The firm also announced a mini-computer cartridge unit. Features include up to 20.5M bytes of on-line storage, one to eight drives per controller, 6k byte/sec transfer rate, and 120 in./sec independent rewind.

Interfaced to the Digital Equipment Corp. PDP-11 Unibus and software-compatible with the TA-11, the basic unit in OEM quantities sells for approximately \$2,100, the firm said from 36 Highland Ave., 06492.

## Maxi, Mini, Mikros in Series

# GA 'Solution' Compatible With SPC-16

By Patrick Ward

Of the CW Staff

NEW YORK — A 16-bit "maxi-computer" that can address 1M words of memory, a large-scale integration (LSI) mini and two microcomputers have been announced by General Automation (GA).

Called the "Solution Series," the four machines are software- and I/O-compatible with GA's SPC-16 minicomputer line, a spokesman said.

The GA-16/440 maxicomputer, GA's first machine of this size, is primarily aimed at the large user who can do its own systems work and at OEMs, a spokesman said.

Described as "a systems programmer's machine," the microprogrammable GA-16/440 includes an enhanced version of the SPC-16 instruction set with standard extensions to accommodate hardware stack operations, argument transfer capabilities and full left shift, GA said.

The GA-16/440 can address 1M words of memory with all 11 of its functional addressing modes. It also has 16 hardware general-purpose registers and three levels of priority interrupts, GA said.

Complete parity, wise and execute pro-

tect capabilities and 512 64-bit words of control store expansion are available.

The GA-16/440 offers 720 msec basic instruction execution time through its use of LSI Schottky logic and high-speed core, GA said.

Programming languages include Extended Fortran, Cobol, Basic and Macro Assembler. Several operating systems are available for data processing and control applications.

### LSI and Core

The GA-16/330 is an industrial/OEM minicomputer designed for dedicated real-time applications. The unit combines the high performance and the low price and power consumption of LSI with the reliability of core memory, GA said.

A one-board minicomputer, it is centered around a 16-bit n-channel MOS processor with optional control store expansion. The unit features a 720 msec memory cycle time; extended instruction set; full word, byte and bit manipulation in memory and registers; complete interrupt structure; and a range of higher level language compilers, assemblers and interpreters, GA said.

## Harris 24-Bit Mini Set to Vie In Upper End of 'Midi' Market

FORT LAUDERDALE, Fla. — Harris Computer Systems here is expanding its Slush line of minicomputers with a 24-bit machine which, it said, will compete in the upper end of the midi market against such systems as the Interdata 8/32, Modular Computer Systems' Modcomp IV, Systems Engineering Laboratories' SEL 55, the Data General Eclipse S-300 and Digital Equipment Corp.'s PDP-11/70.

The Slush 7 features an asynchronous CPU with instruction prefetch and interleaved core memory for a cycle time of 425 nsec, according to the firm.

The system uses software that has been in the field with the rest of the Slush line, including four operating systems: resident (ROS); tape (TOS); disk (DOS), and disk monitor (DMS).

In addition, a total of six language processors related to the software package. They are Fortran IV, Cobol, Interactive Basic Compiler, Snobol 4, RPG-11 and a Macro Assembler.

The Slush 7 CPU offers multiprotocol memory in both core and semiconductor. With I/O processor channels on the multiprotocol memory, high transfer rates can be achieved, the company said; semiconductor memory can transfer at 4.8M byte/sec on one port or interleaved multi-

ple channels at 15M byte/sec.

The Slush 7 interfaces with peripherals currently used with the Slush 5 and Slush 4 and S100 and S200 systems.

The basic Slush 7 CPU with 32K core memory is priced at approximately \$45,000, Harris said from 1200 Gateway Drive, 33309.

## Has Anyone Seen This Mini?

NEW STANTON, Pa. — The lure of a \$7,500 reward and state and federal help have not turned over any substantial clues in the theft here of a minicomputer system.

The experimental teaching device, named Leachim, was stolen June 12 from a hotel parking lot on the Pennsylvania Turnpike, according to Harold Smith.

Smith is president of Harold Smith Adjustors, the Manhattan insurance adjusting firm which is offering the reward.

"It's still missing," he said. "We have the FBI and the Pennsylvania State Police in on the case and leads all over the place," but none have been suc-

cessful.

Leachim's conversational capabilities, which include prolonged dialogue if an incorrect answer is made by pupils, won its developer, Prof. Michael Freeman, and his invention a televised guest appearance on the Phil Donohue show, aired in Chicago.

The next morning he discovered the device had been stolen.

The minicomputer was insured with Lloyd's of London for \$75,000, Smith said, adding his firm is the New York representative of Lloyd's.

The GA-16/110 microcomputer includes an n-channel silicon gate MOS LSI processor, 1K of random-access memory (RAM) and I/O capabilities on one 7-3/4-in. by 11-in. board.

It offers 16 basic microprogrammed instructions, 16 general-purpose hardware registers, vectored priority interrupts, hardware multiply/divide, fully parallel I/O bus, memory expansion to 64K directly addressable words and a real-time fail-safe group including power fail/auto restart, operations monitor alarm, system fail restart and real-time clock interrupt.

The GA-16/110 also offers optional memory parity error detection and recovery interrupt, memory write protection and a control store expansion module.

A real-time executive Control II, provides the operating environment.

The GA-16/220 microcomputer system consists of two 7-3/4-in. by 11-in. boards. In addition to all the features provided by the GA-16/110, it also offers multi-channel cycle stealing DMA, integral serial I/O controller, microchannel read-only memory (ROM), real-time clock and full operator controls.

The GA-16/220 is supported by three operating systems that provide disk-based Control I, real-time scheduling Control II and real-time foreground/background multiprocessing operating environments Control III.

It can be programmed in Basic, Fortran, Assembly or Cobol.

Prices for the GA-16/440 and GA-16/330 start at \$8,950 and \$3,250 respectively. The GA-16/110 and GA-16/220 microcomputer systems cost from \$531 and \$765 respectively in OEM quantities.

General Automation is at 1055 South East St., Anaheim, Calif. 92805.

## Half-Card Naked Milli Systems Released as Packaged Versions

IRVINE, Calif. — Computer Automation (CA) has introduced the Alpha LSI-3/05 series of computers. Packaged versions of the half-card Naked Milli computers announced last January, the Alpha LSI-3/05 series is

### Miniworld Products

designed with standard, off-the-shelf TTL components for low-end applications.

The Alpha LSI-3/05 computers come in three different series, each mounted in a chassis and featuring a variety of models.

• All the models of the A series include a Naked Milli half-card CPU, a 10-A power supply, a three-slot motherboard and an operator's console. The lowest priced model has 256 16-bit words of semiconductor (MOS) random-access

memory (RAM) on a half card with sockets for up to 8K of read-only memory (ROM) chips and a price of \$701 in lots of 100.

• The B series begins with the same configuration as the smallest A series model but includes a 15-A power supply and a five-slot chassis. The smallest model is priced at \$829 in the same lot size.

• The C series computers use the five-slot chassis and 15 A power supply and come with a programmer's console, instead of an operator's console. The price for the smallest configuration (including the same CPU and memory as the A and B series) is \$1,012 in lots of 100.

A variety of other configurations, including some with standard full-size chassis, accommodate up to 32K 16-bit words of directly addressable memory.

## DEC Users Get Floppy Unit

BERKELEY, Calif. — A floppy disk system is said to offer Digital Equipment Corp. users twice the capacity of the comparable DEC unit at the same cost.

A microprocessor controller is used to interface the DSD 210 floppy system from Data Systems Design (DSD) to DEC PDP-11, LSI-11 and PDP-8 CPUs with complete instruction sets and media compatibility, DSD said.

The system, interchangeable with the DEC RX8/RX11 floppy disk system, is a complete package, including two or four diskette drives, a microprocessor controller, an interface to the mini-computer, a control panel with individual write protect switches, power supplies and all cables.

Diskettes for the 210 are written in IBM format, which includes flexible sector sectoring and reliable cyclic redundancy-check error detection.

Microprocessor architecture results in high-reliability through a self-test microprogram and a small component count, the firm said.

Diskette capacity per drive is 256K bytes with a data transfer rate of 10 kbytes/sec. The 210-8 system permits PDP-8 users to store data in the normal 8-bit byte mode or in a special 12-bit word mode.

The 210 is available in tabletop or rack-mounted versions. The minicomputer interface occupies one small peripheral slot on the PDP-11, a single LSI-11 backplane module location or one Omnibus slot on the PDP-8. DSD makes the controller available to OEMs. Quantity discounts are offered to both end users and OEMs.

The 210 costs \$2,995 for a unit with two diskette drives. Deliveries are 30 days from the firm at 1122 University Ave., 94702.

## Floppy Disk Drive Added to CDC Line

LOS ANGELES — Control Data Corp. has announced an addition to its 9400 flexible disk drive line for the OEM market, the 6.4M-bit-capacity CDC 9404.

Up to four Model 9404 drives can be interfaced in a daisy-chain configuration via multiple connectors using a single flat-ribbon cable to further reduce system cost, the firm said.

Average power consumption and heat dissipation have been reduced in the 9404 since power to the stepper motor drops from a nominal 29 watts to less than 2 watts when the unit actuator has reached the final track location, CDC said.

According to company tests, power supply and cooling requirements can be reduced by more than 50% in a system using four drives.

Rotates at 360 Rev/Min

The 9404 recording media rotates at 360 rev/min while data is read or written on 74 of the 77 tracks of the single recording surface with the remaining three tracks reserved as spares.

Data transfer rates are 350- or 500 kbit/sec in single- or double-density modes, respectively.

Media and system provide compatible data interchange with IBM 3540/3740/3790 and System/32 equipment. The 9404's random-access storage uses a single removable diskette capable of hard-sector or soft-sector format.

Other features standard with the 9404 include ceramic integrated circuits, a highly reliable ceramic read/write head, continuously monitored unit-read interrupts, write-fault circuitry and write-current selection.

The 9404 will be available this month, and deliveries are scheduled 45 days after receipt of order. The unit is priced at \$450 to \$500 in OEM quantities, the firm said.



CDC 9404

## Silent 700

electronic data terminals

# Texas Instruments "Silent 700" programmable data terminals:

**A price you can afford.  
Performance you can count on.  
And copy you can keep.**

"Silent 700" Model 742 programmable data terminals offer a lot more than mere intelligence for business management systems.

They give you a complete terminal package in locations where most business information is generated and used... such as remote offices, warehouses, stores or hospitals.

A quiet, self-contained thermal printer gives you a retainable audit trail of transactions for easy reference, routing and filing.

The simple TICOL language lets you generate your own user programs on the terminal itself, with no separate equipment or central computer support required.

And the same terminal package holds all the com-

munications features and options you need to move data to and from your computer or other terminals.



Versatile "Silent 700" programmable data terminal offers easy operation and powerful options for many business management systems.

Cost-effective performance

Standard in each "Silent 700" programmable data terminal is the microprocessor and memory capacity to handle most user applications.

For applications requiring increased capacity, additional memory with a more powerful TICOL language can be added as an option in the same terminal package.

Dual magnetic tape cassettes let you store your programs and data conveniently, for later transmission to your computer.

And combined with these powerful performance features are quiet 30-characters-per-second printing speeds and communications features that help reduce over-all system costs.

Improving man's effectiveness through electronics

## Proves Productivity Booster

## Mini Shepherds Sludge at Pollution Control Plant

SAN JOSE, Calif. — A minicomputer-based control system is boosting productivity and lowering energy consumption at the San Jose/Santa Clara Water Pollution Control Plant here.

The Varian 620L minicomputer is at the heart of the automated system, which has virtually taken charge of a large portion of the routine management of the plant. The mini receives all operating information such as flow rates, tank levels, air pressure and valve positions. It displays and records the information and coordinates the flows into and out of the various processes based on preset tolerance levels.

The control system automatically distributes incoming raw sewage to the plant's 24 primary tanks. The mini then directs the flow of settled sewage and

biological solids to the aeration tanks and controls the 2,400-horsepower engines which drive centrifugal air blowers to introduce the correct amount of dissolved oxygen.

This oxygen permits activated sludge containing millions of microorganisms to feed on the organic matter in the sewage. The mini assigns the aeration tank effluent to the plant's 22 final tanks, where the biological solids and the clear, treated effluent are separated. The effluent is discharged to the chlorination facility and then to San Francisco Bay.

Besides improving system balancing and efficient control, the computerized system has improved plant productivity, since few new personnel were required when the plant expanded in capacity recently.

Also, the automated control of the aeration and nitrification processes is expected to reduce blower use and lead to energy and engine-wear savings. Furthermore, by more efficient dispensing of chemicals in the sludge-thickening process, an additional savings is anticipated.

## Administration Better

The availability of timely management information has also improved plant administration. CRT display units provide "live" process readings as well as hourly, daily and monthly averages of any plant process measurements on demand.

The computer memory stores flow diagrams which can be displayed on a video display showing graphically each of the plant's operating areas and current measurements there.

The computerized control system was designed and programmed by Fischer and Porter, a company headquartered in Warminster, Pa. The company supplies instrumentation, computer systems and chlorinating equipment in the environmental field, as well as other areas.

The Varian mini has a 24K core memory. Other equipment includes a multiplexing unit to receive the analog field input signals and two analog-to-digital converters.

The system is designed for 400 analog inputs and 160 on/off-type inputs. Two printers are used — one to signal and document alarm conditions and one to periodically summarize plant conditions.

There are 20 pen-operated trend recorders and a keyboard console with video display which is the main controlling unit. Flow schematics and data tabulations are presented on a second video display.

A backup computer performs off-line data processing and program development functions. A magnetic tape unit is used for storing process information and loading software.

Three teletypewriters, including one in the laboratory where sewage samples are analyzed for toxic substances and process efficiency, are also used as input/output devices.

Fischer and Porter chose the Varian machine for "flexibility, cost and speed," according to project engineer Val Rutups. "The system is expandable to monitor 2,000 points and the computer is compatible with a variety of other hardware," he said.

## Data Reduction Unit Reduces Time Needed

## To Test New Planes

WICHITA, Kan. — By using a recently acquired automated data reduction system containing a minicomputer, Beech Aircraft here has been able to reduce the flight time necessary to test models of its new planes.

It can do this because the system can record more data in fewer flights than its manual predecessor system could.

The system, whose hardware and software were supplied on a turnkey basis by Aydin Monitor Systems of Fort Washington, Pa., includes a 12K Varian 620L 16-bit minicomputer, a card reader, teletypewriter, digital tape recorder and line printer.

The system works this way: The aircraft carries a small portable pulse-coded modulation (PCM) system which is essentially a multiplexer and encoder. Readings of various physical parameters, such as temperatures and pressures, are taken at intervals as small as six msec through sensors.

The serial digital PCM data is recorded on magnetic tape in the aircraft. The data collected includes, for example, engine temperature, air conditioning temperature, pressures of cooling flows, generator temperatures, electrical currents within the electrical system, altitude, air speed, altitude, acceleration and pitch and roll rates.

Time from a time-code generator is recorded simultaneously on a separate tape track.

When the airplane has returned, the tape containing the collected data is delivered to the system. The system then reads the taped data, printing out tabulations of parameters under study vs. time.

If there is a particular period during the test flight which is of special interest, the mini or a larger computer may be used by Beech to do further "number crunching" and generate more detailed plots.

## Systems network adaptability

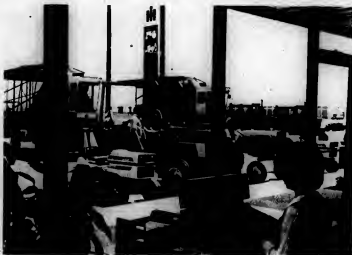
If your business system involves tying your Model 742 terminals together in a complete communications network, TI offers the Model 700 TPS\* Terminal Polling System.

Designed around the TI Model 960 Series minicomputer, the TPS automatically calls remote "Silent 700" data terminals, collects data stored on the magnetic tape cassettes, and logs the data on magnetic tape in a format readable by a host computer.

This scheme gives users a complete, cost-effective data capture network for distributive data processing and communications.

## International Harvester found more

International Harvester, which recently selected a large quantity of these models for use by its dealers for remote data entry and local processing in Service Parts Inventory Management and Dealer



International Harvester dealers throughout the country use "Silent 700" programmable data terminals for quick, economical management of inventory and accounting data.

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"The TI terminal answers International Harvester's needs — simplicity of operation, nationwide service and the capacity to fill our dealers' requirements at a moderate

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## What's your application?

If you're interested in an affordable solution for your distributive data processing and business management systems needs, contact the TI problem-solvers at the nearest office listed below. Or, write Texas Instruments Incorporated, P.O. Box 1444, M/S 784, Houston, Texas 77001. Or, call Terminal Marketing at (713) 494-5115, ext. 2126.

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Model 700 TPS Terminal Polling System links the TI 960 Series minicomputer with "Silent 700" terminals for a complete data network.

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## CI Notes

### Micro Firms Sign Agreement

NEW YORK—National Semiconductor Corp. and Rockwell International's Microelectronic Division have signed a comprehensive agreement making each a second source for the other's microprocessors.

The move plugs holes in the product lines of each company while enlarging the total sales potential of their combined products in the microprocessor marketplace.

The agreement covers both firm's complete line of microprocessor products, provides options on second sourcing modifications and establishes policy for periodic review of new processor developments.

In addition to establishing competitive second sources for their microprocessors, the agreement provides each company with a microprocessor line ranging from 4-bit low-cost systems to high-performance 16-bit systems.

### Intel, Central Data Make It Legal

SAN FRANCISCO—Intel Corp. has announced parties have been signed making its acquisition of Cleveland-based Central Data Systems, Inc. legal and final.

The price was \$3.5 million.

### Calcomp Picks Agfa-Gevaert

ANAHEIM, Calif.—California Computer Products, Inc. (Calcomp) and Agfa-Gevaert of Antwerp, Belgium, have signed an agreement making Agfa-Gevaert the distributor for the Calcomp 2100 line of alphanumeric computer output microfilm (COM) products in Western Europe, except for Italy.

Calcomp will continue to handle COM sales in Italy and in Eastern Europe as well as in the U.S., Canada, Latin America and Asia, according to the agreement.

## Supershorts

Tektronix, Inc. has been awarded \$7.4 million in the patent infringement suit filed against the U.S. in 1961. U.S. Court of Claims Judge H. Cooper awarded \$4.8 million in royalties for patent infringement and \$2.5 million for delayed damages.

The award is subject to possible appeal and congressional appropriation.

Cognitronics will market and manufacture Optical Recognition System, Inc.'s optical character recognition (OCR) equipment exclusively worldwide, according to a recent agreement signed by the firms.

With this agreement, Cognitronics expands its line of equipment to cover virtually all types of OCR applications.

Service will be provided through existing facilities of both companies.

Computer Interface Systems, Inc. has formed a Control Products Division to manufacture and market minicomputer-processed process control systems for the chemical batch-processing industry.

Auto-Con, the division's first product, is a turnkey system in the \$100,000 range to handle three to 15 vessels.

Memorex Corp. will display its 1600 series on-line computer output microfilm system for the first time at the International Micrographics Conference in Sydney, Australia, next month.

The demonstration will be presented by the company's Australian marketing subsidiary's sales engineers.

## Undaunted by Telex Settlement

# IBM Kicks to Pursue Antitrust Cases

By Nancy French

OF THE CW STAFF

The Telex decision to settle its claim against IBM and withdraw its Supreme Court appeal will not affect other competitors' intentions to pursue their various antitrust suits against the giant mainframe manufacturer "diligently."

This was the consensus expressed by spokesmen from at least four such firms with trials scheduled one after another throughout 1976 and early 1977.

"You have to look at why Telex settled," Sanders Corp. Counsel John Keefe said in Nashua, N.H.

"If the Supreme Court refused to take its appeal, the \$18.5 million judgment would have become final," he said.

"There was no reason for the Supreme Court to take this case, despite the fact large amounts of money and important legal principles were involved, particularly since a lot of the same issues are pending in the federal action in New York," he said.

"IBM, on the other hand, has relished

itself of a problem in settling," he said. If the Supreme Court had refused to take the appeal, IBM would have been faced with enforcing the \$18.5 million judgment against Telex, which would have "put Telex out of business."

For IBM, \$18.5 million is "chicken feed," and trying to collect it would have been "very bad public relations for them," he said.

Aside from restating its resolve to continue to pursue its suit against IBM, Memorex Corp., in Santa Clara had "no comment" on the settlement, but California Computer Products, Inc. (Calcomp) in Anaheim did.

### Why Settle Now?

"Obviously, we don't know what transpired between Telex and IBM, but we understand there have been extensive negotiations between them for the past three days," the Calcomp spokesman said.

"The curious thing about it is why Telex settled now, rather than waiting to

hear if the Supreme Court was going to hear its appeal.

"Telex said it couldn't afford to pay the judgment, and if it couldn't afford to pay it on Friday, it still couldn't afford to pay it on Monday, why not wait until Monday and see what happened at the Supreme Court?" the Calcomp spokesman asked.

"If the Supreme Court won't hear the case, IBM's won. If the Supreme Court is going to hear the case, and you're concerned about losing, then you ought to settle, if you're IBM. If you're not concerned about losing, why bother to settle?" he said.

"As for our case against IBM, we believe, with the information now available, particularly the documents that turned up recently concerning IBM's reasons for not entering the plug-compatible peripherals business, we have an excellent chance of winning our lawsuit."

"We're diligently preparing for that suit and, to my knowledge, IBM has not approached us for a settlement," he said. "We're suing for \$150 million and, if we win, we'll get treble that amount—\$450 million. That's a lot of money," he said.

John B. Langer, president of Hudson General Corp. in Great Neck, N.Y., also refused to speculate on the Telex or Marshall settlements. "I'm sure each had its own reasons for wanting to settle," Langer said.

Hudson, a third-party lessor and owner of Telex peripherals, has a \$28 million antitrust suit pending against IBM.

Hudson was scheduled to go to joint trial with Transamerica Corp. and Marshall in Los Angeles next August. However, Marshall had dropped its suit and settled out of court, only Hudson and Transamerica remain.

Commenting on Marshall's decision to settle, Transamerica's Counsel Walter Lewis said, "We were disappointed, but we recognized that Marshall's financial position was such that it had to view with great concern its capabilities of incurring the cost of prosecuting a case of this type."

A Marshall spokesman in El Monte, Calif., is reported to have pointed out that, since Marshall isn't in the computer peripherals business any longer, the firm doesn't have to fight to maintain a place in the industry.

## Honeywell Announces Interest In Acquiring Xerox User Base

By a CW Staff Writer

MINNEAPOLIS—Honeywell Information Systems (HIS) President Clarence W. Spangle has made public the firm's interest in "the disposition of the Xerox Corp. Data Systems Division" in a formal announcement here.

"Honeywell has been studying the situation," Spangle said. "Xerox announced its withdrawal from the computer mainframe business, and initial meetings have been held in El Segundo, Calif., and Stamford, Conn.," Spangle said.

Questioned about the firm's ability to raise the funds needed to acquire the entire Xerox computer mainframe operation, a spokesman who noted "disposition" covers a lot of things, confirmed that Honeywell was primarily interested in the Xerox customer base, rather than in its facilities or sales operation.

Talks were "very preliminary," he said. "There's a lot of horse trading yet to be done," he said. "We're interested in those

aspects of the company that would best fit in with the rest of our operation and, as to what aspects are negotiable, I don't know."

A Xerox spokesman contacted about the announcement would say only that Xerox is "negotiating" with Honeywell as well as Univac.

He said that, as far as he knows, Honeywell and Univac are the only two real contenders in present negotiations and that, despite its enthusiasm, "Telexfile is not a realistic possibility at the moment."

Noting that Xerox systems on rent worldwide are worth about \$105 million at original purchase price, "Honeywell could probably negotiate a figure it could handle," an industry source said.

"Honeywell has experience acquiring other company's users," he said, pointing out that the firm is still serving former General Electric customers today.

Univac declined to comment on the announcement.

## Why Buy Another Company's Customers?

By Edith Holmes

OF THE CW STAFF

NEW YORK—The motivation behind acquiring another computer company's customer base is increasing a company's market share, Clarence W. Spangle, president of Honeywell Information Systems (HIS) and executive vice-president of Honeywell, Inc., said here last week.

This was the primary motive behind Honeywell's acquisition of General Electric's (GE) computer assets, Spangle said in testimony presented in the government's antitrust suit against IBM in the U.S. District Court for the Southern District of New York.

By continuing to increase its market share, Honeywell hoped to achieve a relatively stable position in the marketplace.

There were other reasons behind the acquisition as well, he added. Among them were: recognition of the increasing difficulty Honeywell faced in replacing the installed systems of competitors, realization that the chief pos-

sibilities for growth rested with its present customer base, awareness that the European market was growing faster than the U.S. market and the belief that there was a need for Honeywell to make a strong entry into the large systems class.

The GE base was attractive to Honeywell because its acquisition would provide some room for expansion in the U.S., Spangle said.

GE also had greater holdings in the European market and was believed to have advanced further than Honeywell in large systems development.

At that point, Honeywell was wrestling to develop its \$200 system and recognized the coming need for substantially greater investment capital.

Honeywell wanted capital to spend on offerings in the small-systems end of the mainframe market as well, he said.

By acquiring GE's manufacturing facilities, the equipment it had installed in the field and much of its stock patents and other intangibles, Spangle

said Honeywell did acquire a much larger customer base which it has been able to hang onto.

Similarly, HIS expanded its European market and was able to combine technical talent and capitalized on GE's large-systems development.

### Disadvantages, Too

But there were disadvantages as well: It took longer for HIS to develop a common product line that could be learned by customers and then used by Honeywell and GE customers.

In addition, Honeywell acquired more facilities than it needed for the combined enterprise. Poor economic times, notably 1970-71 and 1974-75, increased this sense of overcapacity.

Finally, sales and service people had to be trained to market and support a much wider range of products, and Honeywell did not experience the "synergy snore" that some felt that would have occurred had it had one product line, Spangle said.

# 1100 Captures 50% of Datapoint's Disk System Sales

By Molly Upson  
of the CW staff

**NEW YORK**—Sales of Datapoint Corp.'s diskette-based 1100 system account for over half of the firm's current orders for disk-based systems, Larry Harrington, product marketing manager, said in an interview here recently.

Datapoint has been shipping the 1100 since the beginning of the year.

Part of the system's popularity is due to the fact users are becoming more cost-conscious, he said.

In addition, the upward compatibility within the product line on the object-code level enables users to have increased flexibility, he said. Datapoint brought out the same compiler for different models last March.

For 1975, Harrington expects "another good year." Sales should grow a minimum of 30% to 40%, he said. This compares with 100% for each of the past three years.

Sales of the diskette unit are starting to impact the cassette 1100, he said, adding he sees the trend toward disk continuing. The diskette 1100 is even slightly impacting cartridge disk sales as well, he said.

The 1100 can run 360/20 Hesp as well as emulate an IBM 3780, he said.

Other disk-based systems use Diablo 10M-byte cartridge disks and Memorex 25M-byte units, he said.

The Datapoint 5500 can handle up to eight Memorex units, and the 2200 can handle up to four Diablo drives, he said.

With communications capability on the diskette 1100, the firm is starting to see an increasing number of networks using Datapoint equipment exclusively, he said.

For instance, a number of 1100s are being linked with a 5500 as the principal CPU. In other instances, the 5500 may link with a larger mainframe or the terminals may link with a CPU directly, he added.

The Datasphere model, based on the

5500, now offers concurrent processing capability while handling communications, he said.

## 5500 Cuts Processing Time

The 5500, which was introduced last December, was a year late in appearing, he said. But it uses 4K chips with more instructions than the 2200, which cuts processing time by more than half, Harrington said.

The market for big systems—with up to 16 stations—is just opening up, he said. "The big job is convincing people they can have real power out there."

In line with its emphasis on distributed processing, Datapoint's target market is large corporations, he said.

With its range of offerings, Harrington said he feels only IBM also spans the range of product offerings.

And Datapoint intends to continue to offer products throughout the spectrum, he said. "You have to watch both the low

and high end," he said. "You have to stay ahead or drop out," he added.

Although most firms are entering the area of distributed processing, he said Datapoint has the edge that stems from prior experience.

"We have proven software," Harrington said. "All the others are one to two years behind," he added.

Harrington said he sees Datapoint sticking to its area of expertise rather than expanding into making peripherals. The firm makes the CPUs and CRTs, most interfaces and controllers, he said.

For maintenance, Datapoint uses a Datasphere system to track calls and disposition of its service engineers. It promises a call from a local service engineer within an hour.

The firm has had its own maintenance force for about 2-1/2 years, Harrington said, and charges extra for service in remote areas. There are Datapoint systems being used in conjunction with the construction of the Alaska pipeline.



## Executive Corner

### Davidson Quits Honeywell

Douglas A. Davidson, the third Honeywell Information Systems vice-president to leave in two months, has resigned to join Mohawk Data Sciences (MDS) as senior vice-president for sales.

Only last month Honeywell promoted Davidson to vice-president for sales.

### Other Moves

William W. Eggleston has been elected president and a member of the board of directors of IBM World Trade Americas/Far East Corp.

J. David Kelley has been appointed president of National Communications Data Ltd.

Bob Robbins has been appointed vice-president and controller of the Data Processing Division of Intel Corp.'s Data Services Group.

David E. McKinley has been appointed president of IBM's Information Records Division.

Dr. C. Lester Hogan has been elected to the board of directors of Tab Products Co.

John Kason, executive vice-president of University Computing Co., has been named chief operating officer.

Arnold D. Palley has been named executive vice-president of Brandon Applied Systems, Inc. and Cory L. Slaughter has been named president of Brandon Systems Institute, Inc.

Richard W. Snyder has been elected chief executive officer and Jean-Francois Augier has been elected a member of the board of General Computer Systems, Inc.

Stephen A. Grosky has been named vice-president and general manager of the Commercial Systems Division at Bunker Ramo Corp.'s Information Systems Division.

Tommy W. Drum has been named vice-president of CATV and general services of Cox Data Systems.

Robert R. Benz has been named vice-president of operations of the Lease Marketing Division of Intel Corp.'s Data Products Group.

Ephraim Gitelman has been appointed vice-president of operations at Computer, Inc.

Terry W. Smith, James J. Formosa Jr. and David Perdue have been named vice-presidents of sales and marketing, operations and systems and programming, respectively, at Data Service Corp.

### Correction

Microline Corp. named two vice-presidents recently: Derek Richell will head Product Management, and James D. Wyllie will take charge of marketing.

## The case for Tape Management Software.

Processing efficiency and productivity have probably never been more important than they are today. And tape management snarls are the biggest thieves of efficiency and productivity.

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UCC TEN (Data Dictionary/Manager). For IBM users, this system centralizes, controls data definitions, provides powerful cross reference features, automatically generates data base control statements, facilitates new systems design.  
UCC FIFTEEN (Resort Management System). Saves hours on restarting OS jobs. Simple, sophisticated software automatically corrects OS catalog. GDC leaves before you run or restart.  
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## Curbs Tax Incentives

### House Unit Votes Revised 'Disc' Plan

By Nancy French  
of the CW staff

WASHINGTON, D.C.—The House Ways and Means Committee has voted to curb sharply—rather than kill entirely—the tax incentives offered firms who export manufacturing goods through a domestic international sales corporation (Disc).

Under the Disc program, American firms have been permitted to set up separate subsidiaries to handle exports. One-half of the income earned from these overseas shipments can be deferred indefinitely.

During hearings this summer, industry officials testified elimination of the Disc program could have a serious impact on U.S. exports at a time when

companies face serious cash flow problems and capital shortages [CW, July 23].

The approved proposal, offered by Rep. Joseph Karth (D-Minn.), offers tax incentives on about 25% rather than 100% of income earned through a firm's Disc organization.

Under Karth's plan, a firm would average its Disc income during the base period of 1972, 1973 and 1974 to determine its base taxable income.

The first 75% of that Disc income would be taxable and payable at once, like normal taxes.

For example, if Company X had an average Disc income of \$10 million for that three-year period, 75% of that income, or \$7.5 million, would be taxed

this year as normal income. The firm could then defer 50% of the taxes due on the \$2.5 million balance.

#### Five-Year Base

Once a company has established its base figure, the base would remain in effect for five years, whether income goes up or down.

After that, the base would be recomputed each year by dropping the earliest year's income and adding one at the other end. The first reaveraging would be done by dropping 1972's Disc income figure and adding 1975's, for example.

Small exporters—those with export profits under \$100,000—would still be permitted to defer 50% of taxes due on their total Disc incomes.

Deferrals under the revised Disc Program will continue to be allowed for an indefinite period, and no provision was included to require repayment of any taxes previously deferred, despite the strong objections of the Ways and Means chairman Al Ullman (D-Ore.).

#### Repeal Proposal Rejected

The committee defeated by a vote of 7 to 2 a motion offered by Sen. Gibbons (D-Ill.) that would have repealed the Disc program entirely and required companies that had deferred taxes under the program to repay them over a 10-year period.

Jack Biddle, president of the Computer Industry Association, expressed mixed feelings on the committee's action.

"We are pleased the House Ways and Means Committee has seen the importance of the Disc provision to the smaller companies in America that export their products," he said.

"The Disc is not a tax loophole, but rather a means of keeping U.S. dollars within the U.S. and creating numerous jobs for American citizens, he explained.

"We will continue to work with the committee and hope the complete provision will be revised and even enhanced so that a strong, viable computer and data processing industry can profitably manufacture its products in the U.S. for export abroad," he said.

The measure will be considered by the full House and the Senate Finance Committee.

wider variety of peripherals in the future, he predicted.

Basic Four was one of the first firms to direct its customers to independent software suppliers, many of whom are dealers, Erickson said.

The firm offers customers two ways to go with an independent software firm recommended by Basic Four and pay 100% of the cost or to contract through Basic Four, which is responsible for the software development, and pay 120% of the cost, Schmitter explained.

In the latter case, Basic Four handles the software support. About 60% of customers now choose this approach, he said.

The firm has a catalog of packages developed for the Basic Four system. Many of these are oriented toward a specific line of business, such as bottled gas distribution. In these cases, the users often help sell Basic Four to other firms in the industry, he observed.

In addition, Basic Four offers a Comprehensive Business System, which consists of five modules. Generally this software is used within the wholesale distribution industry, but a lot of people buy it and add to it or tailor it.

The firm also has some packages it developed for specific industries, such as real estate brokers, tour operators, fuel distributors, lawyers and certified public accountants, he said.

### Service Firms Urged to Safeguard Privacy of Personal Information

MONTVALE, N.J.—Computer service companies should analyze their own operations and take reasonable steps to safeguard the privacy of the personal information they handle before "jill-considered regulatory action" is taken, the Association of Data Processing Service Organizations (Adapso) said in a recent position paper.

Entitled "The Right to Privacy: Industry's Responsibility," a report urged service companies to:

- Ensure the existence of any personnel data recordkeeping system is not kept secret unnecessarily.

- Permit an individual to find out, when appropriate, what information about him is in a record and how it is used.

- Allow an individual to prevent information about him that was obtained for one purpose from being improperly used for another purpose without his consent.

- Permit an individual, when appropriate, to correct or amend a record of identifiable information about him.

- Assure the reliability of data for its intended use and prevent the misuse of such data.

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# Software House Finds Specializing Secret to Success

ATLANTA — Do what you do best. Do one thing and do it very well. Enhance a company's strengths; don't just keep up with the industry.

Those maxims are the secret to success, according to John Imlay, president of Management Science America, Inc. (MSA), which designs, develops, maintains and markets financial application packages.

The secret must work, at least for MSA, which came back from Chapter X bankruptcy in 1971 to revenues of \$6.2 million in 1974. Imlay expects MSA to top \$8 million this year.

## Scratching the Surface

"We haven't scratched the surface yet as far as customers are concerned," he said. "We do over \$2 million a year in business with banks, but general industry is still virtually untapped."

The prospect base was 2.5 million in 1971. This figure has risen to 18 million, Imlay said.

"We believe our present base of 1,700 customers is just the tip of the iceberg in terms of the market potential," Imlay said. "In many ways MSA's future is tied closely to that of our industry."

"For years the credibility of [packaged] software was poor because many companies promised more than they could deliver. Most of those companies are gone now and most of those remaining do offer competitive packages," he said.

"As a result, the credibility of the industry has grown tremendously over the past three years and, with credibility, product acceptance has come."

MSA currently markets nine

## Handprint Reader Now Under Test

NEW YORK — Information International, Inc. has begun testing its Grafix 1 system for use in reading clerical handprinting as a means to computerizing a health insurance system, Alfred L. Fenaughty, president of the company, said here recently.

"The first Grafix system was installed for the U.S. Navy in Florida, where it is being used to update and republish 17,000 volumes of critical aircraft maintenance instructions," he said.

"In that application, data is being entered into the computer, without key-punching, by direct scanning of page images."

"After capturing written information, illustrations and halftones, a technical editor has access to any page within 10 sec and can edit or add material via CRT terminal. The material may then be republished 'automatically,'" he said.

## Firm Markets Leads

ROCKVILLE, Md. — Ever hanker after the leads another firm found but was unwilling to follow up on?

Benchmark Marketing Corp. is offering a service that collects leads picked up by salesmen and funnels the information to four vendors per category.

Benchmark is at 4708 Hombeam Drive, Rockville, Md. 20853.

packages: payroll, personnel management; fixed-asset accounting; general ledger; accounts payable; financial information and control; supplies inventory control and purchasing; Altix; and AR 70, a newly acquired accounts receivable system.

MSA has no plans to diversify its offerings into other markets, Imlay said. Rather, it will stick to packages which handle standard accounting functions of today's corporations.

While MSA has sold packages

to replace other products, the main thrust of marketing is to replace an in-house system with a standard MSA package, freeing up in-house DP staff for more creative programming.

"Most companies have an in-house payroll system, for instance," Imlay said. "But, as the Equal Employment Opportunity Commission personnel reporting and tax requirements change, they come to us."

"We will maintain the system over the years and all tax changes are provided through

the maintenance plan. The same is true of our general ledger package."

While MSA does tailor its packages to suit the needs of specific industries such as banking or insurance, it does little customizing for individual companies.

For example, because of the graphs required by the insurance industry, MSA has developed a special graphing feature for the insurance field, Imlay said.

The company is currently looking at the possibility of expanding into the minicomputer field

and into foreign markets.

Imlay expects to enter the mini software market within the next year since "minis are the way of the future."

He also anticipates opening an office in Great Britain by next March. The company is currently surveying the market there, he said.

"So far the main worry is the difference in payroll systems between the U.S. and Great Britain, which may necessitate extensive changes in our standard package," Imlay said.



## CDI Sees Miniterm in Its Future

NEW YORK—Computer Devices, Inc. (CDI) is incorporating its Q3 thermal matrix print mechanism into its line of printers.

The Q3 will appear in the Miniterm, a 17½ "movable" keyboard printer with an RS-232C interface, Ken Wright, CDI president, said in a recent interview here.

The Miniterm is but one of a new line of products coming from CDI, which is having its best year ever in terms of revenues and profits, he said.

The Q3 "was announced prematurely," he admitted, the firm expects to produce the Miniterm the first of next year.

Although most of CDI's current products are portable printers with acoustic couplers, in keeping with the standard industry definition of this type of product, the very light Miniterm will lack the coupler.

The single quantity price will be \$1,750.

## Astronautics Wins GSA Terminal Bid

Astronautics Corp. has been awarded a contract for computer communications terminals by the U.S. General Services Administration (GSA).

The contract has a potential dollar value of \$70 million based on the government's user needs over the eight-year contract life, according to Theodore D. Puckorius, commissioner of the GSA Automated Data and Telecommunications Service.

### Other Awards

On-Line Systems, Inc. has received a five-year contract for

computer services from Dynabank Corp. for an undisclosed sum.

Pertec Corp. has received a contract valued at more than \$3

tal Equipment Corp. for Pertec's T-9000 vacuum column tape transports.

Sycor, Inc. has been awarded a \$13.5 million contract from National Car Rental System, Inc. for 152 Model 350 flexible disk terminal systems to be used at National's car rental locations.

Pacific Northwest Bell Telephone Co. signed a five-year lease contract with Computer Systems of America, Inc. for a \$1.1 million Bunker Ramo data terminal system. Installed in various telephone company branch offices throughout Oregon and Washington since 1972, the equipment was originally leased directly from Bunker Ramo.

Dolph Associates, Inc. has received two contracts totaling \$750,000 from the states of Georgia and New Hampshire for the management systems design of two different types of welfare and Medicaid information systems.

## Contracts

million from Interdata, Inc. to supply magnetic tape drives, disk drives and flexible disk drives. The firm also received a \$1 million contract from the Computer Special Systems Division of Dig-

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## Marketer Forms In Orange County

ORANGE, Calif. — Marketing Concepts Co. has been established here to help generate business for growth-potential companies and other electronics companies in the Orange County area.

Services will include advertising, product literature, direct mail, publicity, trade shows — "the gamut of market promotion needs directed toward building sales," according to Gene Sylvester, who started the firm after seven years at Lockheed Electronics' Data Products Division.

MDB Systems, an independent manufacturer of minicomputer interfaces and general-purpose modules, an exhibit house with numerous electronics clients and a company that creates large color photo reproductions for commercial interiors using optical scanning techniques have already signed on, according to Sylvester.

The company address is Box 1427, 92668.

## Management Firm Set For DP-Related Groups

ROLLING MEADOWS, Ill. — A firm specializing in the administrative management of computer-related associations and societies has been formed by Donn W. Sanford, former executive director of the Data Processing Management Association.

The Sanford Organization, Inc. will provide a complete range of professional management services, primarily for small to medium-size groups, according to Sanford.

"The Sanford Organization was formed," he said, "in response to the growing need of computer-related associations and societies to utilize professional management firms to implement needed programs, increase efficiency and better serve members through more effective use of dues income."

The firm is at 3315 Algonquin Road, 60008.

## Maisonrouge Says

### IBM Plans No Revolution in Future Gear

PARIS — "We are working toward future machines, there is no doubt... But does that mean an extraordinary revolution?"

Not according to Jacques Maisonrouge, senior vice-president of IBM Corp. and head of IBM World Trade Europe-Middle East-Africa.

One reason for this, which would be sufficient in itself and relates strictly to commercial constraints without even considering the technical constraints, is the weight of the software investment customers have made, Maisonrouge said in a report in *Zero-Un Informatique*.

He noted the difficulties which had been encountered by both IBM and users in the change from the 1401 to the 360.

"That is why, for the future, we think it is preferable to con-

ceive an evolutionary system rather than a system which will create a rupture and force clients

## International News

to reinvest considerable funds in programming," Maisonrouge said.

"Everyone knows the difficulties which are encountered in

going from one system to another when they are not compatible," he said. "So we want to spare our customers from them."

"But, I repeat, in respect to the famous Future Series, there has not been, contrary to what some newspaper articles have led one to believe, any discontinuity in our effort."

"There has been a reorientation of certain programs," Maisonrouge concluded.

## Nixdorf Unveils 3600 Competitor

PADERBORN, W. Germany — Nixdorf has unveiled the 8864 bank terminal system, which has been hailed as a challenge to the IBM 3600 series by the newspaper, *Computer Weekly*.

The 8864 has a 64K-byte CPU specially designed for the system which allocates 32K bytes to custom-designed programs.

The processor, printer and CRT cost about \$24,000. The processor can handle up to four floppy disk units, and

disk drives will be available next year.

Nixdorf also announced two automatic cash dispensers, but has no plans for an automatic transaction terminal that would handle cash issuing deposits, transfers and statements in one service, the article said.

Nixdorf terminals are linked to an 8864 or a network of 8864s to a large mainframe on a point-to-point basis rather than a closed-loop circuit.

## Rank Pulling Out of CPU Market

LONDON — Rank Organisation, which markets Xerox Computers in Europe, has decided to pull out of the mainframe business and concentrate on copiers.

General Manager Stephen Foster said he would like to see both the Xerox Data Systems Division and Rank Xerox Data Systems (RXDS) sold as a single and going concern, according to an article in *Computer Weekly*.

RXDS would not be keen on entering a partnership with any company that might buy the Xerox unit, Foster explained, since that company would likely have international marketing.

## Hitachi, CDC Thinking About Joint Venture

TOKYO — Hitachi and Control Data Corp. are discussing a possible joint venture activity, a CDC spokesman said, confirming a report in *EDP Japan Report*.

But there has been no real resolution of any particular issues, he cautioned.

One of the projects the report said is in the wind is joint development of terminal equipment to compete with IBM's System Network Architecture line.

The report also mentioned speculation that CDC would market Hitachi's M170 and M180 in the U.S., while Hitachi might become a distributor of CDC peripherals and terminals in Japan.

## Yearbook for Asia Due

HONG KONG — The first computer yearbook for Asia will be published and available from the Computer Yearbook and the Hong Kong Computer Society by the end of the year.

It will contain a business directory of computers and computer services.

The yearbook will also contain population figures for computers in use in Asia.

The book will retail for \$10, including air mail postage to anywhere in the world.

Computer Yearbook is located at A-118 Macdonnell Road.



# In data we've got a lot

## MODCOMP

SOLVING PROBLEMS WITH COMPUTERS



This simulator system for terminal and air traffic control will be installed in the USSR by Stansaab Elektronik AB.

## Soviets Pay \$70 Million For Stansaab Air System

MOSCOW - The Soviet Union has purchased an advanced simulator system for terminal and air traffic control from Stansaab Elektronik AB of Sweden for an estimated \$70 million.

The Terminal and Enroute Control Automated System will consist of four operational air traffic control systems, terminal control centers (TCC) near Moscow, Kiev and Mineral'nye Vody and an area control center

adjacent to the Moscow TCC.

Delivery will begin in 1976, with Stansaab responsible for the design, supply and installation of the complete system package comprising computers, displays, radar, communications, buildings, standby power supplies and all ancillary services including training and maintenance support.

### Other Orders, Installations

Intercab, Inc., a Canadian taxi fleet operator, has ordered a computerized vehicle dispatch system based on a 32K Data General Nova 1200 minicomputer.

Computer Centrum Twente, a computer service bureau in The Netherlands, has ordered a Cal-

# communications, more pulling for us.

### Foreign Orders & Installations

ifornia Computer Products, Inc. 2130 system to add microfiche capability to customer service in the eastern part of The Netherlands and western Germany.

Ampex Corp. will install a Video File Information System for the Metropolitan Police at New Scotland Yard in London to assist in fingerprint identification.

The Dublin Savings Bank has installed an on-line financial system consisting of NCR 270 financial terminals linked to an NCR Century 101.

Yamamoto Sangyo Co. Ltd., a Japanese steel trading company, has installed a Univac 1106 computer system.

Iran National Airlines Corp. has ordered PTS-100 programmable data display systems from Raytheon Data Systems for its domestic and international reservation system. Raytheon is initially supplying 119 terminals with another 52 terminals to be delivered later.

The European Center for Medium Range Weather Forecasts, set up by 16 European nations, has ordered a Control Data Corp. CDC 6600 computer system to support research into numerical methods of making weather forecasts.

Hasler AG of Bern, a Swiss manufacturing concern, has ordered a Univac 1110 computer system and the DMS-1100 data base management system to construct an integrated information system.

Bonnierdata AB of Stockholm, Sweden has ordered the CCP communications processor from Chi Corp.

The Instituto G. Donegani, an Italian research institute, has installed a Univac 1106 computer system to process data for simulation studies in chemical research.

Societe Industrielle Aerospaciale, a French participant in development of the Concorde supersonic jet transport, has ordered a Cyber 172 computer system from Control Data Corp.





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### ADMINISTRATIVE ASSISTANT

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It is anticipated that the Coordinator will become the director of the cooperative if the study proves that the cooperative is feasible and desirable, and if appropriate funding is available. Currently funded to September 1, 1976, with annual renewals expected.

**KNOWLEDGE, ABILITIES AND SKILLS:** Must have excellent communications and interpersonal skills - with an emphasis on the preparation of technical reports; considerable computer-related management experience, preferably in an educational environment; thorough knowledge of the problems and benefits associated with the shared use of computer resources.

**MINIMUM EXPERIENCE AND TRAINING:** A baccalaureate degree (master's degree preferred) from an accredited college or university with a major in mathematics, computer science, management science or business administration; eight years' experience in computer-related activities, but five must have been supervisory (or in technical sales); experience in assessment of needs and experience in negotiating contracts highly desirable. Graduate education may be substituted for experience requirements.

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For both positions a Bachelors degree and three years experience on a large-scale third generation system are required. Desirable software experience includes: Assembly, C, C++, COBOL, PL/I, R, S, and T. Salary range is \$13,200-\$13,500 depending on qualifications and experience.

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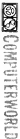
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## One Year After Shake-Up

### Keydata '75 Earnings in Plus Column

WELLESLEY, Mass. — One year after a shake-up that replaced Keydata Corp.'s president and three out of four vice-presidents, the time-sharing firm re-

ported a \$1 million turnaround in gross income and a 15% rise in revenues over 1974.

Net income for fiscal year 1975, which ended July 31, was

### Calcomp Finishes Year in Red, Cites Braegen Write-Offs for Loss

ANAHEIM, Calif. — California Computer Products, Inc. (Calcomp) reported results for fiscal 1975, ended June 30, in red ink with a loss of \$12.4 million on revenues of \$122.9 million.

Last year, the firm netted \$8.7 million on revenues of \$129.9 million.

Net loss per share was \$3.83, compared to net earnings per share of \$2.84 a year earlier.

Calcomp President Lester L. Kilpatrick attributed about two-thirds of the 1975 loss to a write-off of its investment in The Braegen Corp. and abandonment of Braegen's intelligent terminal systems.

### CCI Year 'Successful' Despite Loss

TORRANCE, Calif. — Computer Communications, Inc.'s 1975 earnings dropped to \$16,552 or 1 cent a share compared with \$477,820 or 20 cents a share in 1974.

Revenues also dipped, to \$4.5 million from \$4.6 million last year.

Pre-tax income before

### DPF Plans to Invest

#### \$50 Million in 370s

WHITE PLAINS — DPF, Inc. has announced a campaign to invest up to \$50 million in IBM 370 equipment to reverse its trend of declining computer leasing revenues.

Most of the equipment is expected to come from users and used computer dealers, according to Bertram J. Cohn, the company's chairman and chief executive officer.

The company said 97% of its 360 portfolio, which was valued at about \$22 million at original cost, is now under firm term lease contracts totaling about \$30 million.

At year-end, the book value of the 360 inventory was written down to about \$33 million.

These investments were made in anticipation of an agreement to purchase the firm, but "it became evident in a tight money market that capital required to make the acquisition profitable in the long term could be more judiciously used elsewhere," he said.

SANTA CLARA, Calif. — National Semiconductor Corp. reported first-quarter earnings of \$5.2 million or 40 cents a share

on revenues of \$82.4 million for the period ending Sept. 21. The results compare with earnings of \$5.5 million or 46 cents a share on revenues of \$75.1 million in the year-ago period.

Sales were up 10% compared with the same period last year, according to Charles E. Spork, National Semiconductor president.

Spork noted sales in every major product family increased in the first quarter over the previous quarter and the company's weekly rate of total sales was 8% above the weekly rate in the previous quarter.

Commenting on the lower rate of profit, Spork said the firm's sales were proportionally higher during the first quarter for hand-held calculators but competitive conditions resulted in lower profit margins.

## Acquisitions

Storage Technology Corp. has acquired Utimatec Systems, Inc., a Maywood, N.J. firm, as a wholly owned subsidiary.

Data 100 Corp. has acquired Iomec, Inc. by exchanging 80,000 of its common shares with substantially all of Iomec's 3.4 million outstanding common shares. The transaction will be accounted for as a purchase and is not expected to dilute Data 100's 1975 earnings, Edward D. Ornstein, Data 100 president, said.

Daniel, Mann, Johnson and Mendenhall, international architects and planners, has acquired Logcomp Corp. of Los Angeles as a wholly owned subsidiary.

3M Co. has agreed in principle to acquire the Graphic Systems Division of Gould, Inc. of Newton, Mass., for approximately \$5 million.

On-Line Systems, Inc. has agreed to acquire Leasco Response Ltd., Reliance Group Inc.'s time-sharing subsidiary in the UK. The purchase price was for an undisclosed amount financed from On-Line Systems' working capital.

The Computer Exchange in Great Neck, N.Y., has acquired approximately 99% of the out-

standing shares of common stock of Systems Resources Corp. in exchange for 17,853 shares of Computer Exchange common.

Systematics, Inc. of Little Rock, Ark., has announced the acquisition of Sys Con, Inc. of Grand Rapids, Mich., to gain a fifth center in the Michigan area and strengthen its software position.

Computer Usage Co. of San Francisco has acquired the Singer Co.'s Sunnyvale DP Service Center for an undisclosed amount of cash.

Intel Corp. has acquired Central Data System, Inc., a Cleveland DP firm, for \$3.5 million.

Informatics, Inc. has purchased the stock of Informatic PMI, Inc. from General Telephone and Electronics Corp.

Automatic Data Processing, Inc. has reached an agreement in principle to acquire Financial Control Services, Inc. of Fremont, Ohio, for \$1.9 million in cash.

Chemtron Corp., a firm that sells carbon dioxide and Halon 1301 systems, has acquired Fire Control Engineering Co. of Fort Worth, Texas for an undisclosed amount of cash.

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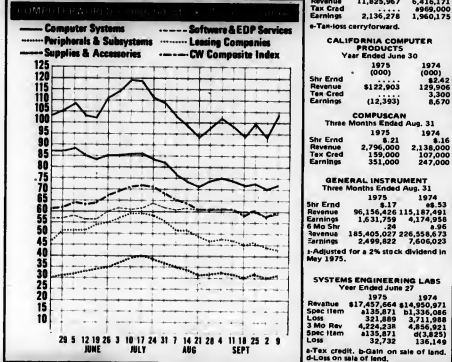
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## Earnings Reports

[illegible]

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